Comet II, a 40-foot cruiser owned by H. L. Williams of Akron, Ohio. She was designed by the Purdy Boat Co. for use at Miami Beach, Fla. Her power is a 6-cylinder Speedway. The forward cockpit is distinctively southern

MOTOR BOATING

119 WEST 40th STREET
NEW YORK, N. Y.

MOTOR boating, as a winter sport, is becoming more and more popular each year. The success of the winter races at Miami Beach during the past several years, lead several other sections of the country to schedule regattas for the coming winter. This winter's season will open at Los Angeles, during the last week in December, or the first week in January of the new year, when Commodore Wood of Detroit—with two of his fastest speed craft, will be the guest of honor. On January 24, 25, and 26, the first winter international motor boat race will be held at Bermuda. Closely following the Bermuda dates will be the winter regatta of the Mississippi Valley Power Boat Association, also the first winter event ever to be held by this Association. It will be given under the auspices of the Southern Yacht Club at New Orleans, February 15 to 18, inclusive. The Florida races this winter, including the long distance cruiser races to Cuba, will be held March 3 to 10. The attention of the motor boat racing enthusiasts will be directed also to the National Motor Boat Show, which will be held in New York City, from February 21 to March 3 inclusive. Therefore, taken altogether, the coming winter season is to be the most active one ever planned.

THE races at Bermuda, scheduled for January 24, 25, and 26, is a new event. The races at Bermuda will be held under American Power Boat Association rules for the Gold Cup class. The event will consist of three heats and will be open to displacement runabouts of 25 feet in length or over, powered with motors of 625 cubic inches piston displacement or less. Bermuda is an ideal location for motor boat racing in the winter. The arrangements for shipping the speed boats to Bermuda from New York, will be unsurpassed. It will likewise be possible for American yachtsmen to readily make the trip to Bermuda on the commodious steamships running between the Islands and New York.

CONTENTS

DECEMBER *1922*

VOLUME XXX, No. 6

Skipper and the Skipped 9-10
Colleen, A Deep Sea Queen 11
The Year's Most Successful New House Boats and Cruising Yachts 12-13
Houseboats, Fast and Comfortable 14
Goodwill, A Complete Auxiliary Schooner 15
Nedmac, an Attractive Auxiliary 16
Paikea, a New Zealand Speed Cruiser 17
Ace, a Limousine Runabout 18
Rexland, a Conservative Popular Type Cruiser 19
A New Tamarack IV 20
Marie B II 21
Cruiser Comfort 22
Transco II, a Successful Diesel Tug 23
Come Play With These New Cruisers 24
A Sportsman's Sea Sled Runabout 25
A Down East Auxiliary Schooner 26
Alice C, a Husky Cruiser 27
A Pair of New Fast Cruisers 28
Economical Transportation for Oil 29
Taking Bearings with a Home Made Pelorus 30-31
How Schooners Get Along Without Power 31
Frances, an 18-Foot Cat Boat 32-33
Small Motor Boats, Their Care, Construction and Equipment 34-36
Prize Question No. 1: What To Do During the Winter Lay-up 34-35
Prize Question No. 2: Ventilating a Cabin in Rough Weather 36
A. P. B. A. Holds Its Annual Meeting 37
A Baby Buffalo Has Arrived 37
Motor Boatmen's Chart No. 38—North Carolina Coast Core Sound to New River Inlet 38
Some Dead Reckoning Pointers 39
Rubicon, a Diesel Schooner 40
American Marine Motors for 1923 41-42
How Fast Can a Runabout Go? 43
Standardization Produces Many Stock Boats 44
Questions and Answers on Lesson No.9 45
Yard & Shop 46

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PARAGON

SAVE this advertisement. It will help you when you pick out your new engine. Here are the principal specifications of the leading marine engines on the market, all equipped with Paragon reverse gears. We present them in this uniform style for your convenience in comparing them and selecting the engine that meets your requirements. When you find the engine you want, write the manufacturer for catalogs, giving more complete information.

Acadia Gas Engines, Ltd. Bridgewater, N. S., Canada
H. P. 3, 4, 5, 6½, 8, 10, 13, 15, 16, 20, 24, 30, 40, 60.

Anderson Engine Co., Chicago, Ill.
H. P. 20—30.

Barker Factory, Norwalk, Conn.
H. P. 1¼, 2½, 4, 6½, 8.

Bridgeport Motor Company, Bridgeport, Conn.
H. P. 4½, 6, 7, 9, 12, 14, 20, 30.

Cummins Engine Co., Columbus, Indiana.
H. P. 12½, 25, 37½, 50, 75.

Canadian Fairbanks-Morse Company, Montreal, Que.
H. P. 3½, 5, 7, 8, 10, 12, 16.

Doman, Universal Products Co., Oshkosh, Wisconsin.
H. P. 4, 7, 15, 18, 40, 50.

Fay & Bowen Engine Co., Geneva, N. Y.
H. P. 23, 40, 45, 50, 85.

Frisbie Motor Company, Middletown, Conn.
H. P. 5, 7, 10, 16, 18, 25, 30, 40, 50, 75, 100.

J. S. Gaffga & Sons, Greenport, N. Y.
H. P. 10, 12.

Hall-Scott Motor Car Co., Buffalo, N. Y.
H. P. 125, 200.

Kermath Manufacturing Co., Detroit, Mich.
H. P. 40.

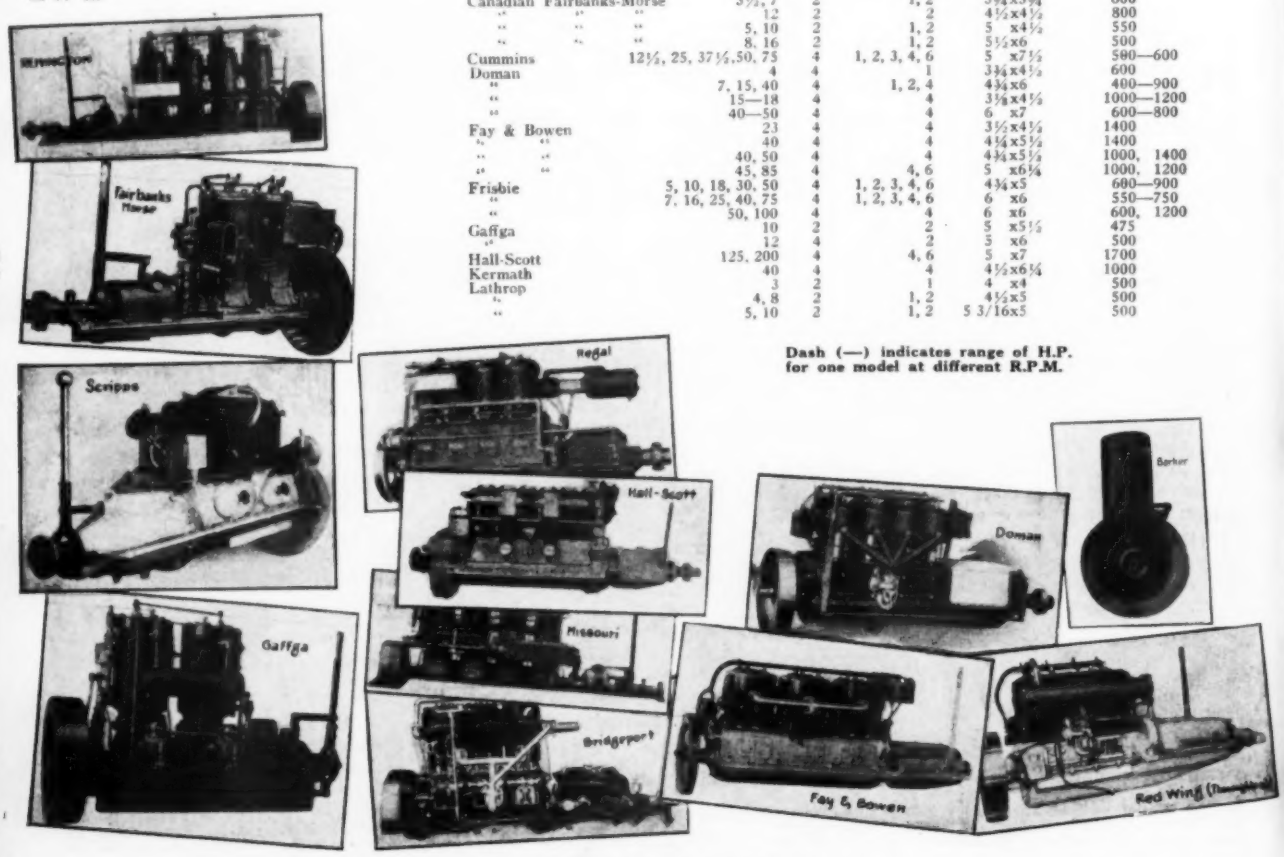
Every one of these manufacturers has made Paragon the standard reverse gear equipment on his engines. That alone is a mark of engine quality, for Paragon is universally recognized as the world's leading gear. So you will be safe in confining your choice to this representative list of marine power plants.

PARAGON GEAR WORKS,

The authorized dealers for these engines can give you expert service on your Paragon Gear.

	H.P.	Cycle	Cyl.	Bore & Stroke	R.P.M.
Acadia	3	2	1	4 x3½	550—575
"	4, 8, 15	2	1, 2, 3	4 x4	650—900
"	5, 10	2	1, 2	4½x5	550—600
"	6½, 13	2	1, 2	5½x5	650—700
"	8, 16, 24	2	1, 2, 3	5½x6	500—600
"	10, 20, 30, 40	4	1, 2, 3, 4	6½x8	425—450
"	16, 60	4	2, 4	8 x6½	750, 1200
Anderson	20—30	4	4	4 x5	500—1000
Barker	1¼	2	1	3 5/16x3½	550
"	2½	2	1	4⅛x4¼	500
"	4	2	1	4 9/16x5	425
"	6½	2	1	5½x6½	400
"	8	2	2	4 9/16x5	500
Bridgeport	4½, 9	2	1, 2	4½x5	500
"	6, 12	2	1, 2	5¼x5¼	500
"	7, 14	4	1, 2	5½x6½	500
"	20, 30	4	2, 3	6½x7½	400
Canadian Fairbanks-Morse	3½, 7	2	1, 2	3¼x3¾	800
" " "	12	2	2	4½x4½	800
" " "	5, 10	2	1, 2	5 x4½	550
" " "	8, 16	2	1, 2	5½x6	500
Cummins	12½, 25, 37½, 50, 75	4	1, 2, 3, 4, 6	5 x7½	500—600
Doman	4	4	1	3¼x4½	600
"	7, 15, 40	4	1, 2, 4	4¾x6	400—900
"	15—18	4	4	3⅛x4½	1000—1200
"	40—50	4	4	6 x7	600—800
Fay & Bowen	23	4	4	3½x4½	1400
" "	40	4	4	4¼x5½	1400
" "	40, 50	4	4	4¾x5½	1000, 1400
" "	45, 85	4	4, 6	5 x6¼	1000, 1200
Frisbie	5, 10, 18, 30, 50	4	1, 2, 3, 4, 6	4¾x5	600—900
"	7, 16, 25, 40, 75	4	1, 2, 3, 4, 6	6 x6	550—750
"	50, 100	4	4	6 x6	600, 1200
Gaffga	10	2	2	5 x5½	475
"	12	2	2	5 x6	500
Hall-Scott	125, 200	4	4, 6	5 x7	1700
Kermath	40	4	4	4½x6¼	1000
Lathrop	3	2	1	4 x4	500
"	4, 8	2	1, 2	4½x5	500
"	5, 10	2	1, 2	5 3/16x5	500

Dash (—) indicates range of H.P. for one model at different R.P.M.



Advertising Index will be found on page 130

BUYER'S GUIDE

IT is quite a task to pick out the right engine for your boat, out of the number of good marine engines made. Choosing the right reverse gear is not nearly so difficult. The Paragon is so far ahead in every indication of public preference that you should have no difficulty in deciding which is best.

Paragon earned its leading position by its merit. It must be a better gear,—better design, better construction and better service. You'll find it on the best engines and in the finest boats. You'll find it in high speed champions, in slower cruisers and in heavy commercial boats.

Write us for catalogs and prices of Paragon gears.

Cushman St., Taunton, Mass.

	H.P.	Cycle	Cyl.	Bore & Stroke	R.P.M.
Lathrop (Cont'd).	6, 12	2	1, 2	5½x5	500
"	6, 12	2	1, 2	5¾x6½	400
"	7, 14	2	1, 2	6 x6½	400
"	8, 16	2	1, 2	6½x6½	400
"	10, 20	2	1, 2	7 x7½	300
"	12, 24, 36	2	1, 2, 3	7½x7½	275
"	12, 24, 28	4	2, 3, 4	5 3/16x6¼	500
"	16, 30, 40, 60	4	2, 3, 4, 6	5½x6¼	500—700
"	16, 24, 32	4	2, 3, 4	5½x8	400
Mianus	6	2	2	4 x4	550
"	10	2	2	4⅝x5	500
"	15	2	2	5 9/16x6	450
"	16, 24, 32	4	2, 3, 4	6 x8	400
Missouri	7, 14, 22, 30	2	1, 2, 3, 4	5 x6	500
Murray & Tregurtha	400	4	6	7¼x9	1400
Nelseco Diesel	180	4	6	9 x12½	350
Packard	45	4	6	3⅜x5	1800
"	185, 375	4	6, 12	5 x5¼	2000
Red Wing	14—20	4	4	3½x4½	800—1200
" "	18—24	4	4	3⅝x4¾	800—1200
" "	28—36	4	4	4 1/16x5	1000—1400
" "	32—40	4	4	4½x5	1000—1400
Regal	2	4	1	3¼x3½	800
"	4, 8, 16	4	1, 2, 4	4 x4½	800
"	5, 10, 20	4	1, 2, 4	4½x5½	600, 700
"	7, 14, 30	4	1, 2, 4	5¼x6½	550, 600
"	9, 18, 27, 36	4	1, 2, 3, 4	6½x7	500
"	32	4	4	4½x5½	1000
"	50, 100	4	4, 8	7½x9	450, 400
Remington	75	2	4	8¾x8	400
Scripps	10—18	4	2	4¼x6	500—1000
"	30—70	4	4	4½x6	700—1600
"	40—100	4	6	4½x6	600—1600
Treiber	20—38	4	4	4¼x6	600—1000
Wisconsin	24	4	4	4 x5	1000
"	40, 60	4	4, 6	4⅜x5½	1000
"	62, 90	4	4, 6	5¾x7	800
Wright Reliable	10, 20, 30, 40, 60	4	1, 2, 3, 4, 6	6 x7½	500
" "	15, 30, 45, 60, 90	4	1, 2, 3, 4, 6	7½x9	400

J. W. Lathrop & Co., Mystic, Conn.
H. P. 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 20, 21, 24, 28, 30, 32, 36, 40, 60.

Mianus Motor Works, Stamford, Conn.
H. P. 6, 10, 15, 16, 24, 32.

Missouri Engine Company, St. Louis, Mo.
H. P. 7, 14, 22, 30.

Murray & Tregurtha, Atlantic, Mass.
H. P. 400.

Nelseco, New London Ship & Engine Co., Groton, Conn.
H. P. 180.

Packard Motor Car Co., Detroit, Mich.
H. P. 45, 185, 375.

Red Wing Motor Co., Red Wing, Minnesota.
H. P. 14, 18, 20, 24, 28, 32, 36, 40.

Regal Gasoline Engine Co., Coldwater, Mich.
H. P. 2, 4, 5, 7, 8, 9, 10, 14, 16, 18, 20, 27, 30, 32, 36, 50, 100.

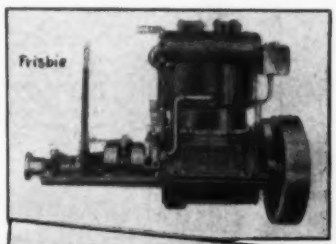
Remington Oil Engine Co., Stamford, Conn.
H. P. 75.

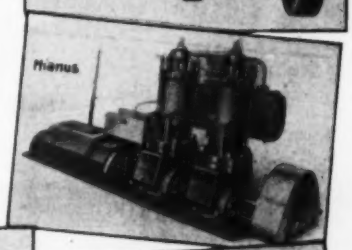
Scripps Motor Co., Detroit, Mich.
H. P. 10, 18, 30, 40, 70, 100.

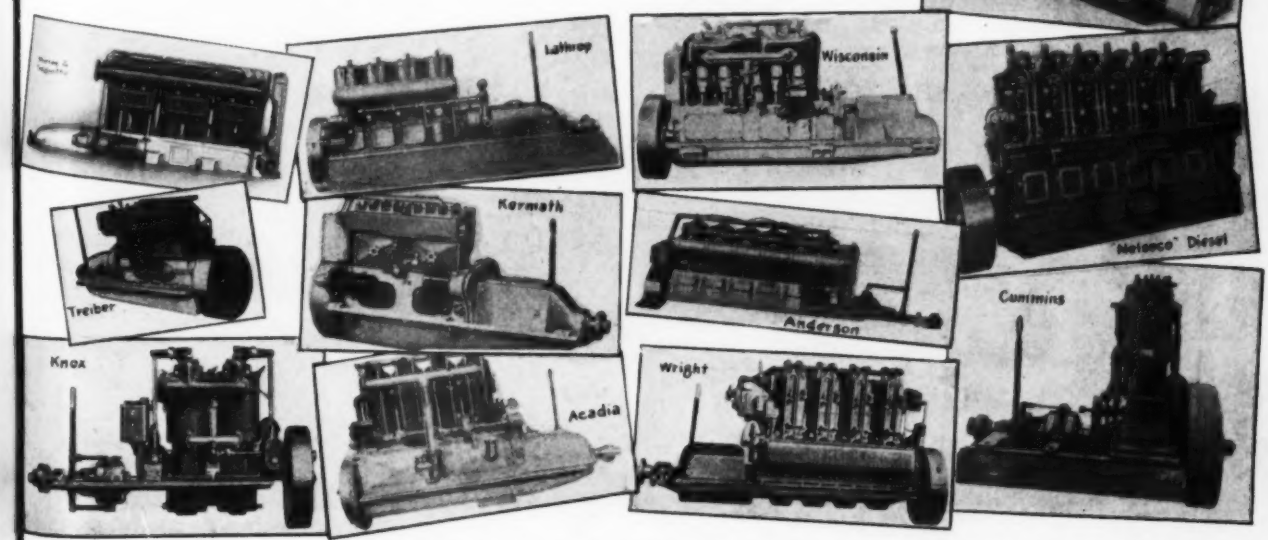
Treiber Engine Company, Yonkers, N. Y.
H. P. 20, 38.

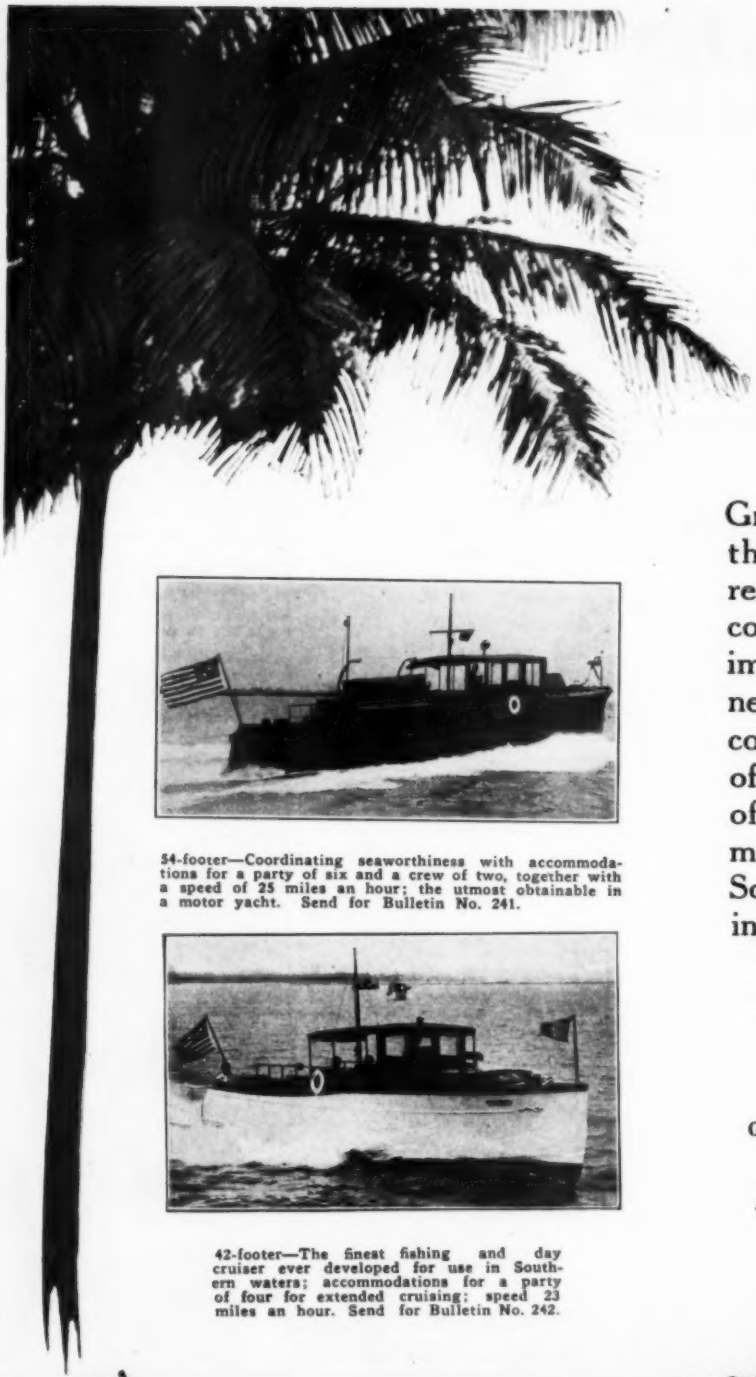
Wisconsin Motor Mfg. Company, Milwaukee, Wisconsin.
H. P. 24, 40, 60, 62, 90.

Wright Machine Co., Owensboro, Ky.
H. P. 10, 15, 20, 30, 40, 45, 60, 90.









GREAT LAKES

CRUISERS AND RUNABOUTS

Great Lakes Craft dominate the Florida waters for the reason that the design and construction embody all the important factors of seaworthiness, comfort, extensive accommodations and a good turn of speed. Subject to receipt of prior orders, prompt shipment can be made by rail to Southern ports on the following types of boats:

30-foot Runabout and 36, 42 and 54-foot Express Cruisers.

Wire or write for bulletins.

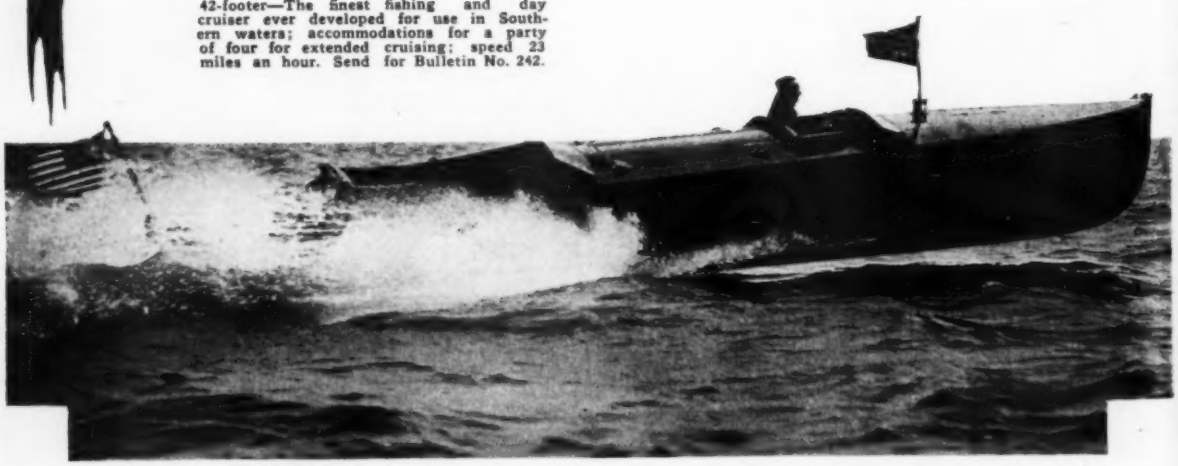
GREAT LAKES BOAT BUILDING CORPORATION

Milwaukee, Wisconsin.

Largest Builders of Express Cruisers in America

54-footer—Coordinating seaworthiness with accommodations for a party of six and a crew of two, together with a speed of 25 miles an hour; the utmost obtainable in a motor yacht. Send for Bulletin No. 241.

42-footer—The finest fishing and day cruiser ever developed for use in Southern waters; accommodations for a party of four for extended cruising; speed 23 miles an hour. Send for Bulletin No. 242.



30-footer—Speed 40 miles an hour or more; 8 passengers. Send for Bulletin No. 243.

MOTOR BOATING
119 WEST 40th STREET
NEW YORK, N. Y.

Skipper and the Skipped

The Tale of a Vacation Cruise and a Misadventure of an Unexpected Kind

By Louis T. Buckinger

MOTOR-BOATING is a pleasure, according to the average boating enthusiast. A game of poker is also a pleasure, I'll say, if one could only snare that Royal-Flush once in a half-century. But there are exceptions to this statement, I'll have to admit. If one was only a multi-millionaire and could afford a yacht like this here Wellfine—this here boat which is supposed to have set the owner's Lesser-Half a negative one million iron men—well, that is absolutely different.

But to have a boat like Grayling wished upon one by a Party of the Second Part who is dead and departed for parts unknown—let me air my soul and vocabulary in the following yarn.

* * *

The schooner Grayling on which the cruise was made

Things were going very badly. Already I had a sneaking suspicion that my vacation was bound to wind up an utter failure. To begin with, ever since we had left Seattle astern on the first lap of our cruise to Hood's Canal, Grayling's source of power—a four-horsepower "clockwork excuse of an engine," as the Skipper frankly put it—had refused to function properly. We lay becalmed in Puget Sound, ten miles from the closest shore, all sails set and the canvas flapping idly in the faint, sultry August breeze. On top of all other worries and

A few of the fish caught on the trip by the author

Hood's Canal and the mighty Olympics

The fascinating environment of the Hood's Canal country

disappointments, my crew, comprised of two ancients who, at one time in the days of long gone by, had boasted the title of Skipper and Mate, respectively, of some dilapidated schooner or Chinese junk, grew dissatisfied and mutinous. Even Spottie, my little canine pal of many a wild hunting and fishing excursion, grew gloomy and downcast and spent his leisure hours pacing dejectedly up and down the blistering deck.

For hours we lay becalmed until late that evening a little breeze sprang up and we slid smoothly over the calm, glassy sea, forging slowly ahead under God's own power, the old and unreliable—the wind. Twilight lingers long in the Puget Sound country and I shall never forget that beautiful autumn eve, as we sat under the pale light of myriads of stars and the dim glow of a big, melancholy moon, listening to the weird strains of the Mate's mandolin.

This close contact with nature affected even Spottie, for he occasionally uttered a long, agonized howl so like a lone wolf serenading the glowing orb of the moon; the brute call of his forgotten ancestors.

The Skipper sat humped over the wheel, gazing out over the placid sea; over to where the flickering light of a vessel shone dimly on the darkening horizon. A faraway look was in his eyes and his bewhiskered face was set in a grim, serious frown. In all probability he was thinking of days gone by; of days when he, too, sailed the seven seas; the days before age and rheumatics compelled him to desert the quarter-deck.

The Mate sat perched upon the cabin hatch, looking for all the world like a gaunt, bald vulture, his ancient Irish pipe gripped between his tobacco-stained teeth and his mind intent only upon the mandolin and his own composition, a hashing of "Il Trovatore, O sole mio, and Ain't We Got Fun?" Altogether the picture that we presented would have made an ideal fadeout for a movie scenario.

Just as I was about to retire into the stifling cabin the Skipper informed me that we would reach our destination by daylight, if the breeze did not fail us.

"Do we have to pass that point over there?" I asked, indicating with my outstretched arm a long, narrow point extending far out into the sea and which showed but dimly in the moonlight.

"That's No Point." came the Skipper's prompt answer.

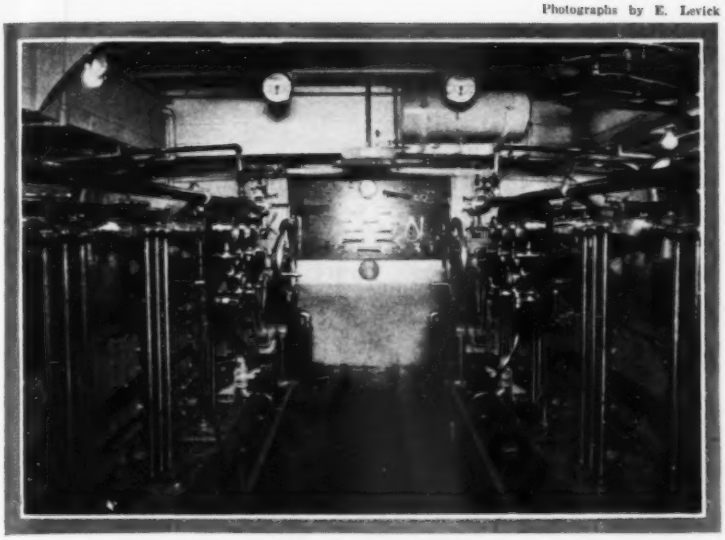
"That isn't a point?" I gasped. "Do you mean to sit there and deny

(*Continued on page 92*)

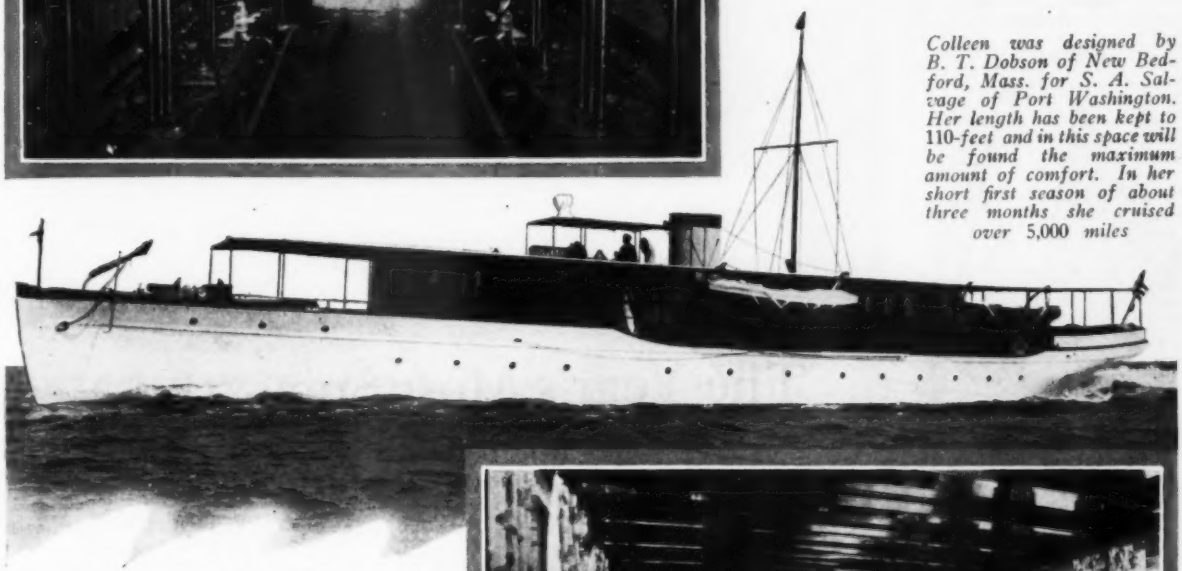
The ancient skipper at home

Point-No-Point and the Olympics in the distance

Photographs by E. Levick



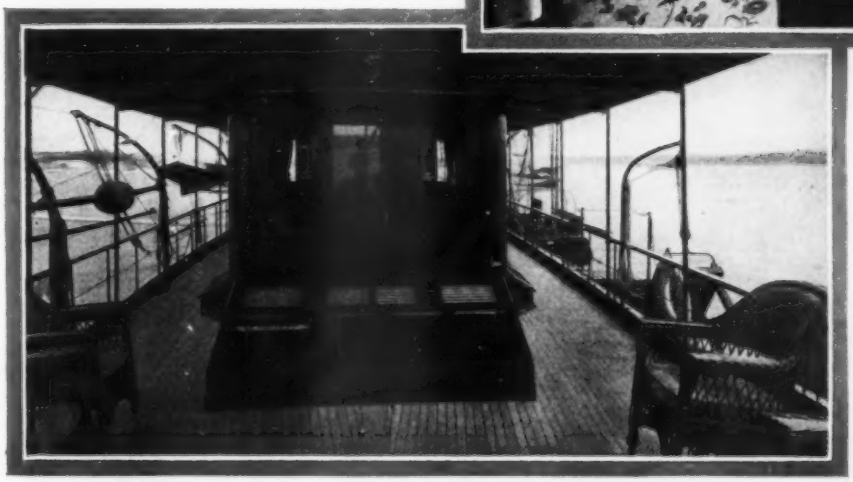
In the engine room will be found a magnificent pair of Winton Diesel engines of six cylinders each, bore and stroke being 7½ x 11 inches. All auxiliary machinery is also of Winton make including a six cylinder 7½ k.w. generating set as well as all electric driven air, water and fire pumps. The main engines will drive Colleen at 14 real knots



Colleen was designed by B. T. Dobson of New Bedford, Mass. for S. A. Salvage of Port Washington. Her length has been kept to 110-feet and in this space will be found the maximum amount of comfort. In her short first season of about three months she cruised over 5,000 miles

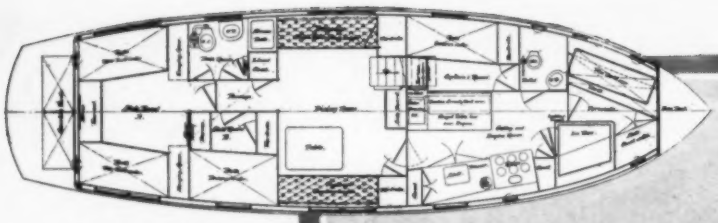
Colleen, A Deep Sea Queen

Modern Diesel Power Equipment Makes Possible An Extensive Cruising Radius With Economy and Speed

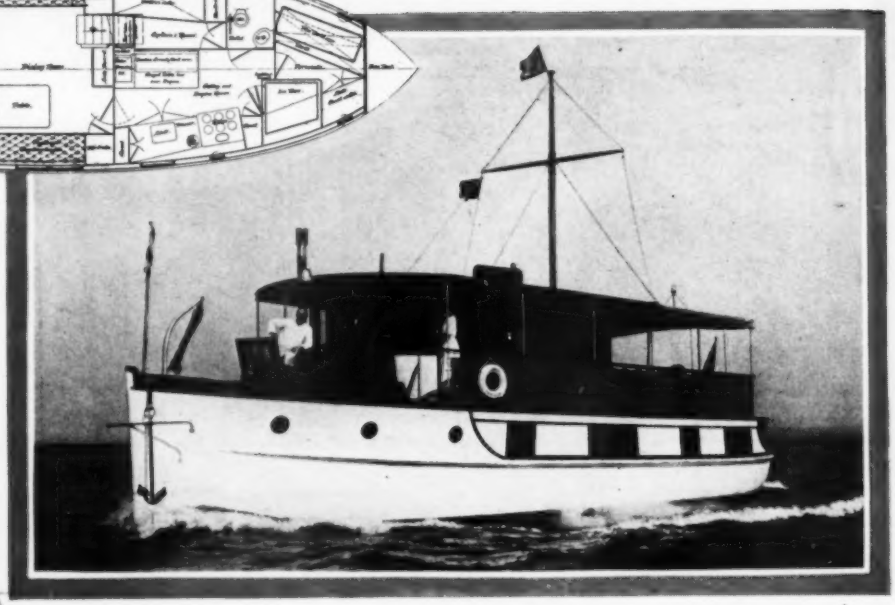


The after deck house makes a comfortable lounge and is the most popular portion of the vessel. In the forward deck house is found the dining saloon with the galley adjacent. Below decks are ample accommodations in single and double staterooms with necessary bathrooms

Ample deck space is provided around all deck houses. The quarter deck when cleared will provide suitable space for dancing parties or other festivities. The deep taffrail with weather cloths around adds to the appearance and makes for greater comfort

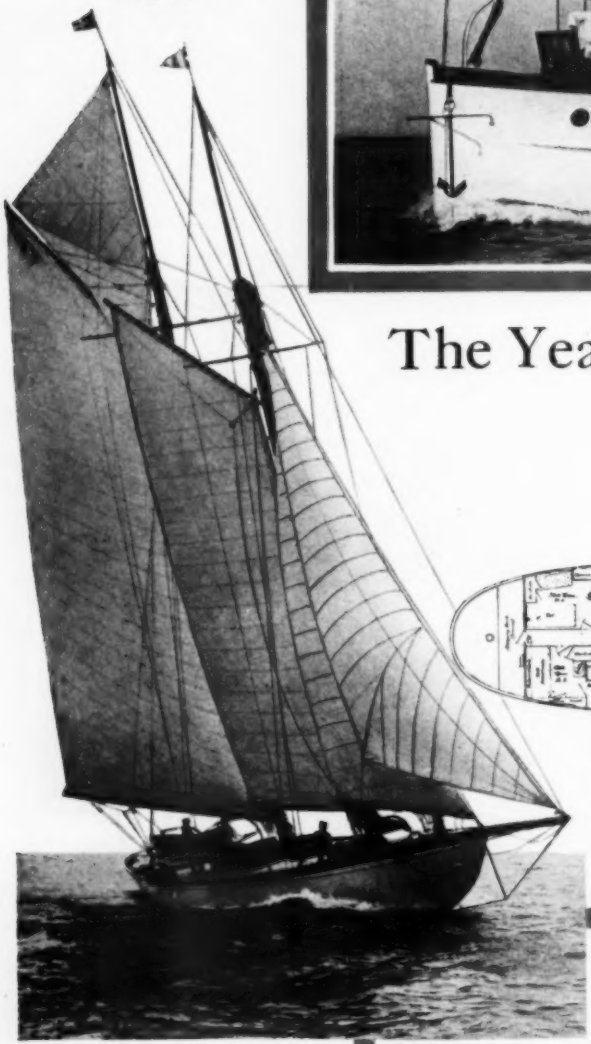


Domino, a 50-foot motor houseboat built for A. G. Southworth by the New York Yacht, Launch & Engine Company, Morris Heights, N. Y.

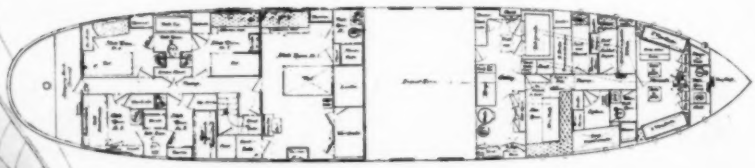


The Year's Most Successful New

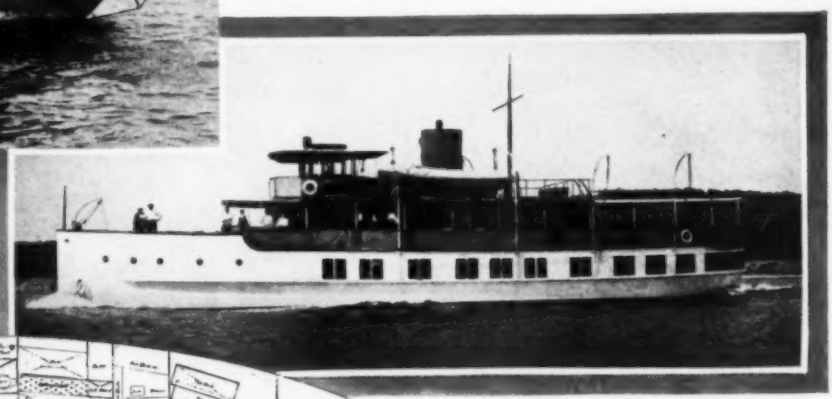
Remarkable Activity in New Boat Construction Designs Prepared By Henry J. Gielow, Inc. Year for Notable Yachtmen

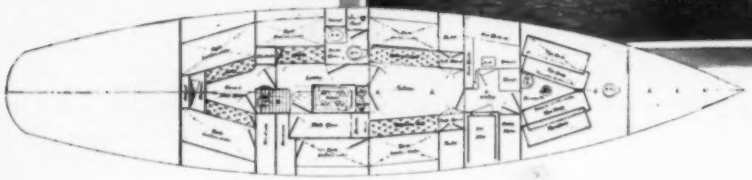


The auxiliary schooner Nirvana built for H. Struckmann of the Larchmont Yacht Club from designs by H. J. Gielow, Inc. She is 58 feet long and her motive power is a 32-37 h. p. Standard engine. Her hull is entirely of wood and very substantially constructed



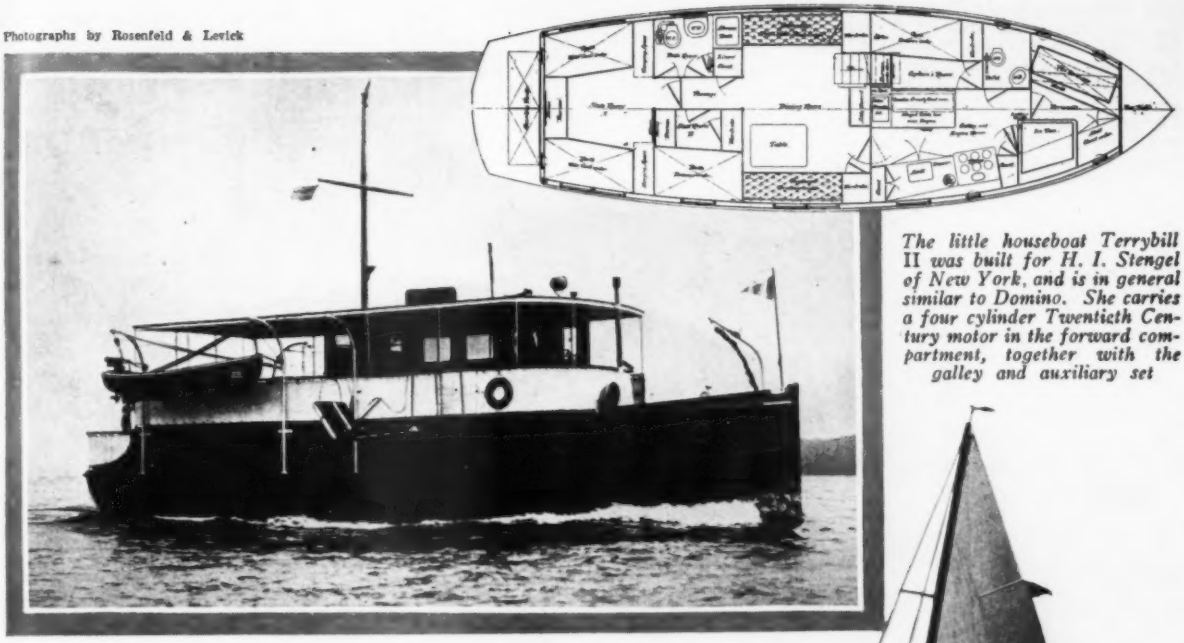
One of the largest and most attractive houseboats designed by H. J. Gielow, Inc., is Miramar, built for the late L. H. Eisenlohr by Kyle & Purdy at City Island. This boat carries two Nelseco Diesel engines of 120 h. p. each. The boat is 100-feet in length and 21-feet in breadth. The furnishings throughout are particularly attractive and pleasing





The arrangement plans of the boats on these pages will give an idea of the possibilities in carefully studied interiors, both as to economy of space and convenience of arrangement

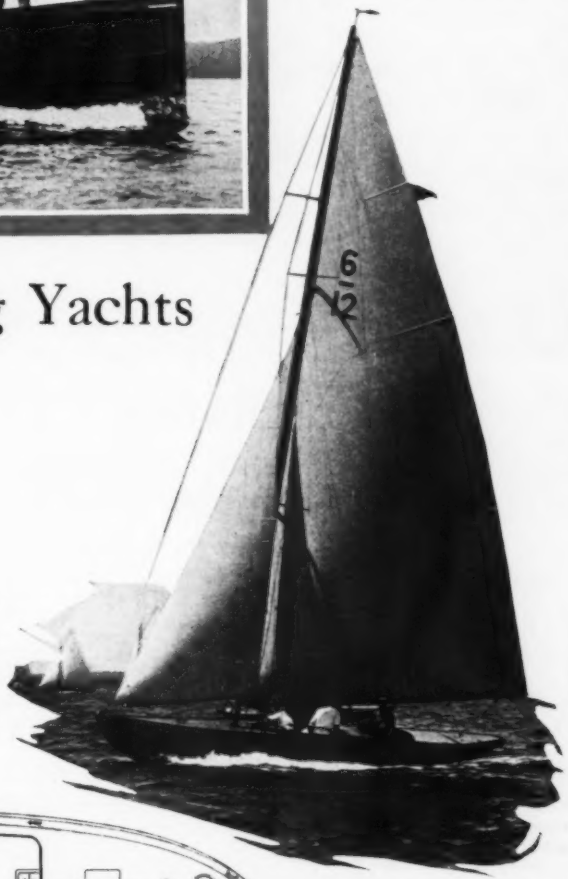
Photographs by Rosenfeld & Levick



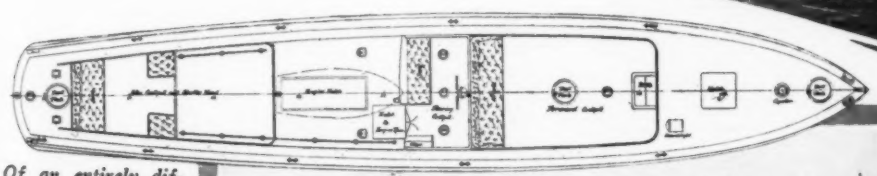
The little houseboat Terrybill II was built for H. I. Stengel of New York, and is in general similar to Domino. She carries a four cylinder Twentieth Century motor in the forward compartment, together with the galley and auxiliary set

House Boats and Cruising Yachts

is Evident From the Number of Successful for Attractive Craft Completed During the in All Sections of the Country.



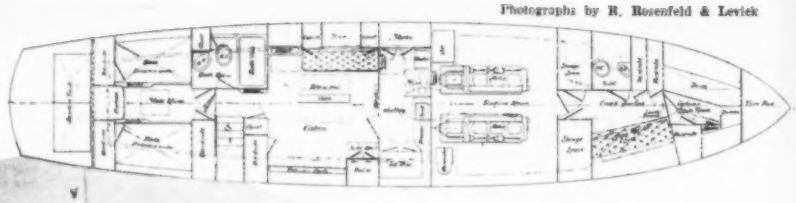
One of the most conspicuous new boats of the year was the six meter sloop Lea, designed by H. J. Gielow for John Birmingham. This boat was built at City Island and obtained much prominence by its very fine work in the International six meter races. She scored the greatest number of points on the American team and was largely responsible for its success

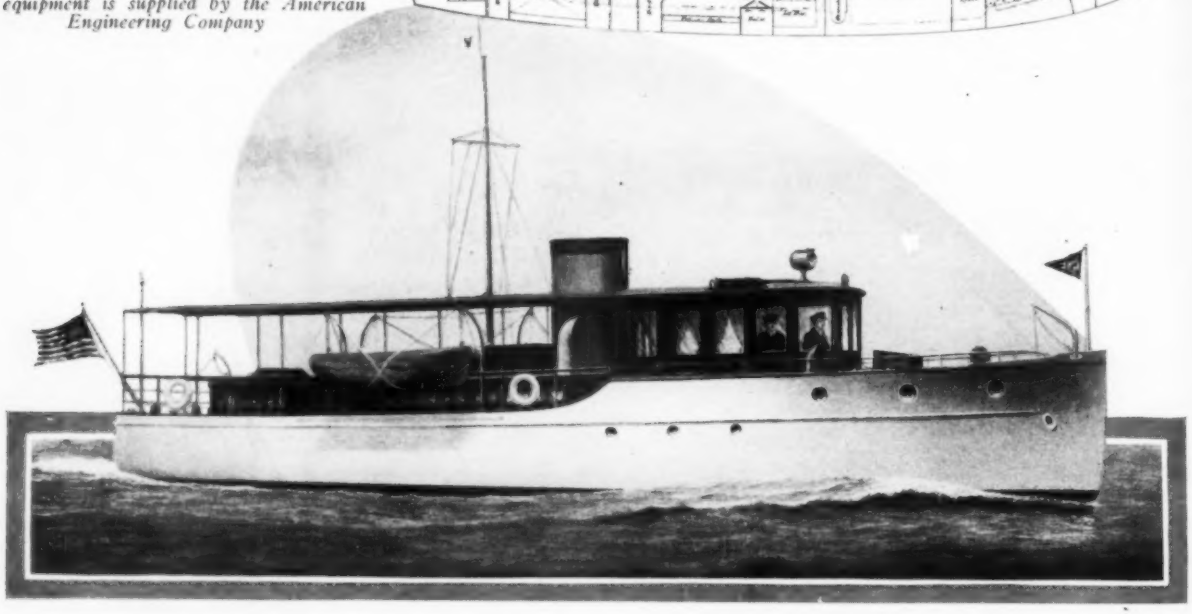


Of an entirely different type is the day cruiser Sheerness which was built for Marshall Sheppey. Her power plant consists of a pair of six cylinder 5¼ x 7 inch Speedway engines, which drive her at high speed. Her auxiliary equipment is complete, a Homelite generating set supplies electricity, while the anchor comes up with the aid of an American windlass

This new motor yacht is rapidly nearing completion at the plant of Matthews Boat Co., Port Clinton, Ohio, for F. B. Van Dorn of Cleveland. She is to be 65-feet in length and equipped with a pair of six cylinder Standard engines. The galley stove is to be equipped with an Oliver oil gas burner, while the deck equipment is supplied by the American Engineering Company

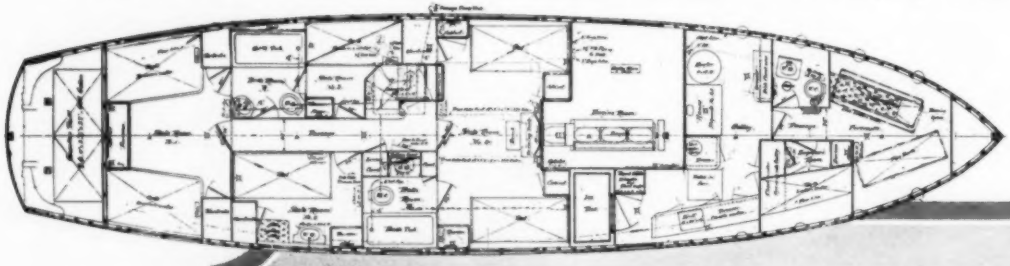
Photographs by R. Rosenfeld & Levick

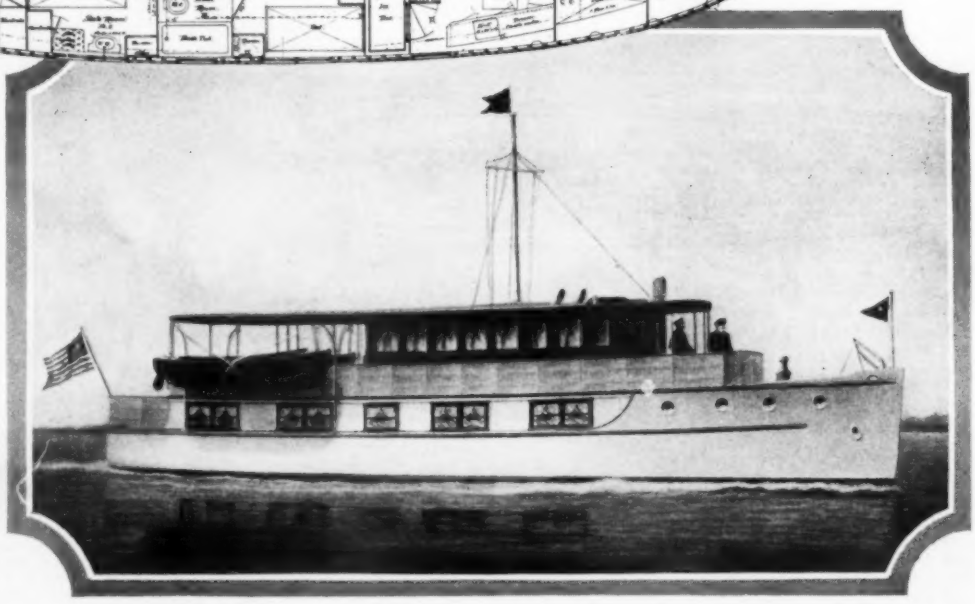




Houseboats, Fast and Comfortable

Splendid Examples of the Boat Builders Art Designed By H. J. Gielow, Inc., Which Provide Cruising Comfort For Their Owners Under Varying Requirements





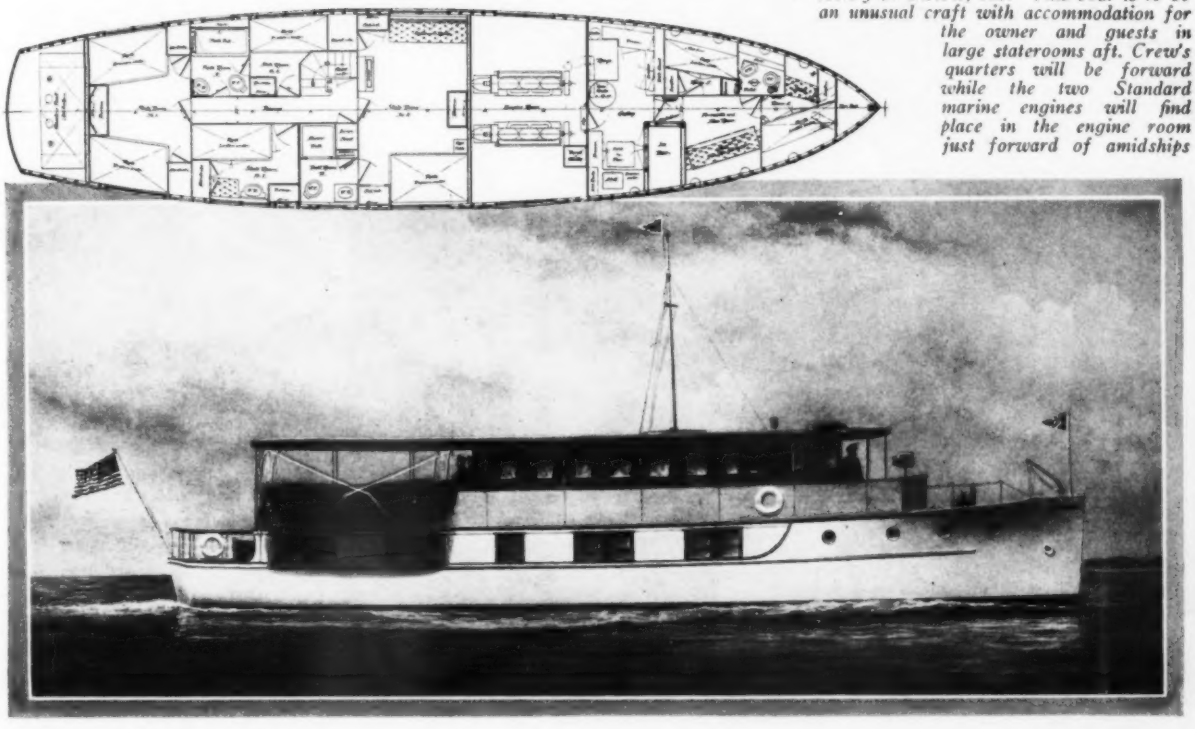
One of the most attractive houseboats of the year is Voyageur being built for George Mercer, Jr., by the New York Yacht, Launch & Engine Company. She is to be 68-feet long and powered with a single Standard gasoline engine. The small boats will be powered with Universal machines and all equipment throughout will be of the highest standard. The accommodations provide for a number of very fine state rooms, as well as quarters for the necessary crew

Goodwill, A Complete Auxiliary Schooner

One of the Most Elaborate Auxiliaries Ever Constructed to be Supplied With Nelseco Diesel Engines

Rapidly nearing completion at the Harlan Plant of the Bethlehem Shipbuilding Corporation, the auxiliary schooner Goodwill, designed for Keith Spalding of Chicago by Henry J. Gielow, Inc., bids fair to be the most attractive new vessel of the year. She is 161 feet overall with 30-feet beam. A six cylinder Nelseco Diesel Engine burning heavy oil will furnish auxiliary power. Complete equipment of small boats will be carried and among these one will be supplied with a Scripps engine while another will use a Niagara engine

An exceptional house boat of 75-feet length is being completed at the plant of New York Yacht Launch & Engine Company for Dr. Herman B. Baruch from designs by Henry J. Gielow, Inc. This boat is to be an unusual craft with accommodation for the owner and guests in large staterooms aft. Crew's quarters will be forward while the two Standard marine engines will find place in the engine room just forward of amidships

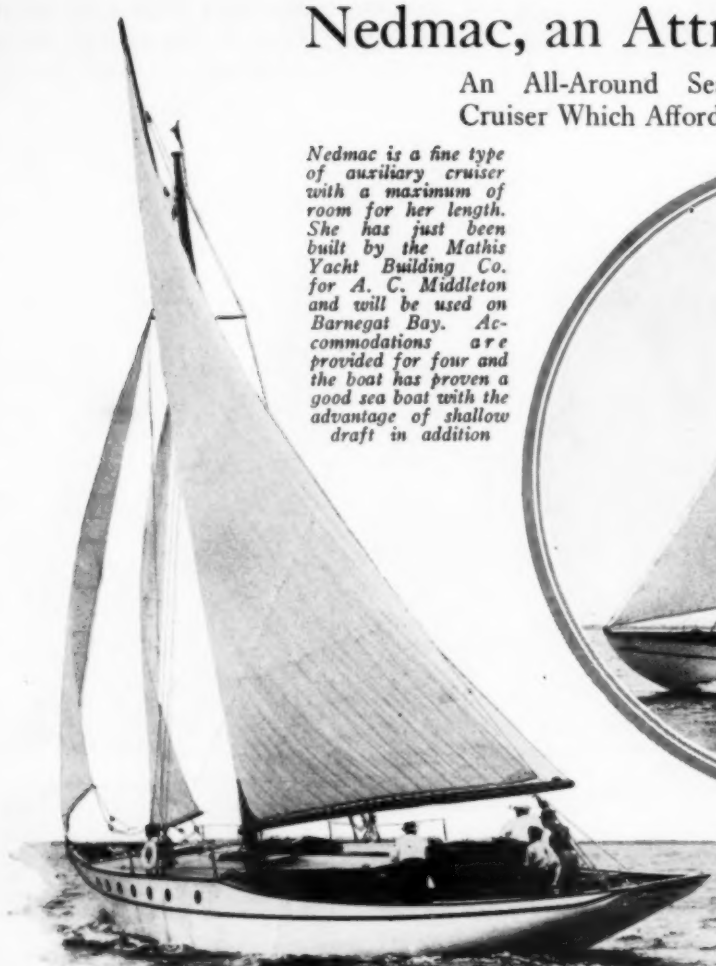


Nedmac, an Attractive Auxiliary

An All-Around Sea Going Auxiliary Cruiser Which Affords Interesting Sailing

Nedmac is a fine type of auxiliary cruiser with a maximum of room for her length. She has just been built by the Mathis Yacht Building Co. for A. C. Middleton and will be used on Barnegat Bay. Accommodations are provided for four and the boat has proven a good sea boat with the advantage of shallow draft in addition

Photographs by M. Rosenfeld

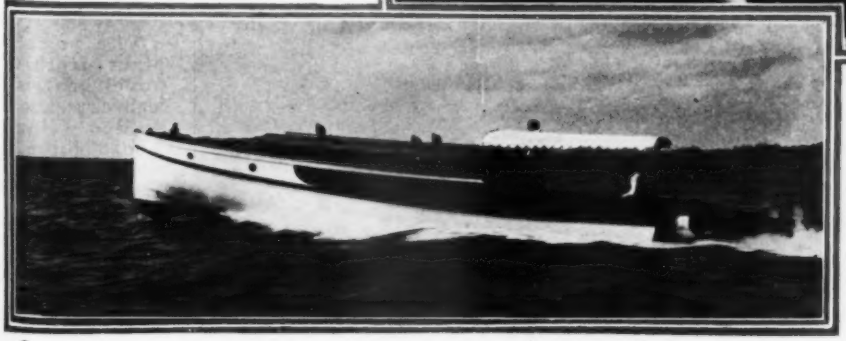


A four cylinder J. V. B. motor is used for auxiliary power and is located under the cockpit deck. A 1½ k.w. Matthews automatic 32 volt set with an outfit of Edison batteries is carried

Paikea, a New Zealand Speed Cruiser

The Tendency for Speed Is Well Shown In the Lines and Construction of This Boat From the Other Side of the Earth

The tendency for speed is reflected in this latest boat to be turned out at the yards of Collings and Bell at Auckland, New Zealand. Her owner, A. H. Court, specified a Van Blerck motor to provide the speed required. A few days after she was launched and without proper tuning up she did nineteen knots in the Auckland Regatta races with the motor turning up less than 1200 r.p.m. With a full crew and heavily loaded with supplies and stores for two weeks she accomplished the sixty-five miles from the Great Barrier to her moorings against a heavy gale in five hours. She was exposed to the full fury of the gale and seas during the whole time and a stop would have been disastrous



Interior and engine room views of Paikea, showing the arrangement of the Van Blerck power plant and the roomy cabin spaces. The compact motor permits of ample passage space on either side. Heavy construction has been used throughout with a double bottom, one and one-quarter inches thick

Attractive appearance under way, view shows top over driver folded back

Ace, a Limousine Runabout

A Cruising Runabout, Completely Equipped with Berths and Galley Outfit, Making Extensive Cruises Practicable

FOLLOWING the trend of automobile developments particularly in the direction of readily removable windows, windshields and the like, the Jos. Dingle Boat Works of St. Paul, Minn., have recently completed and turned over to its owner this handsome cruising runabout. Ace, honest and true throughout, after the manner of its illustrious namesake, is a fine example of the modern boat builder's art.

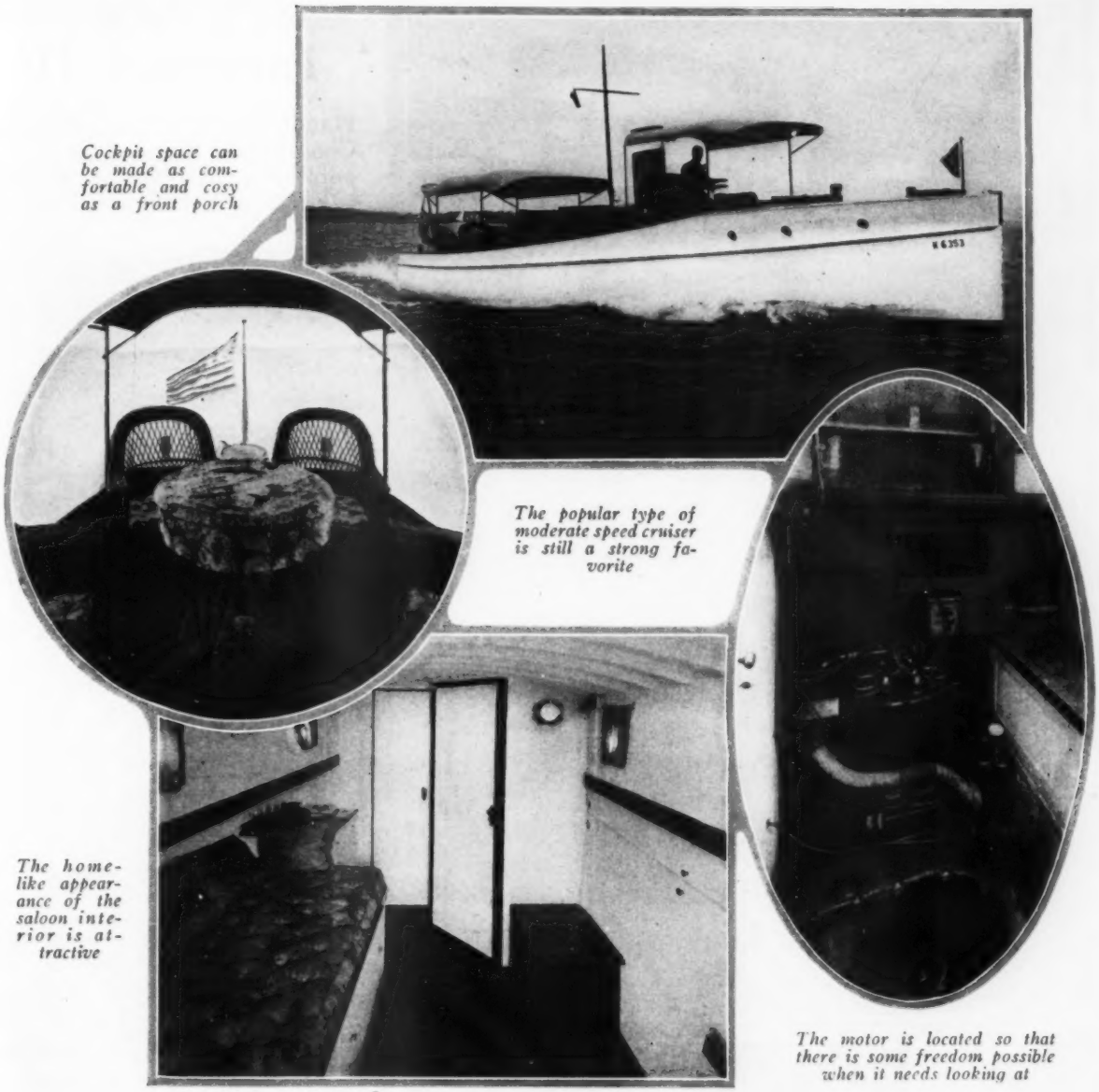
With a length and beam of only 33 by 5½ feet the cabin enclosure is still 11 feet long. The windows drop down into concealed pockets and when down afford a complete open limousine with an unobstructed view. When the threefold windshield is in place and the windows all closed, the cabin becomes a cosy and livable little room with which a moderate storm can be defied. The cover over the driver's seat is operated by one hand and folds back against the top. The interior furnishings are elaborate and complete. A pair of beveled plate mirrors decorate the after corner panels.

Electric light is furnished by means of eight lamps in attractive lily shaped globes. Two box spring mattresses slide under the after deck, and when in the closed position enough projects into the cabin to form the after seat. When fully extended they form a most comfortable and full-sized bed. An ice-box and a completely equipped galley serve to increase the comfort on a long cruise. The table top is folded and when down encloses the entire galley gear.

Ample storage space is provided forward for bags and bedding, etc., while drawers under the berths aft are also available. The top is covered with a cloth inside which forms a double thickness, making insulating air space and serving to keep the cabin cool at all times in spite of the efforts of the sun.

The power plant of this novel boat is high class also. A Red Wing Thoroughbred motor type B-32-40 equipped with a self-starter serves to drive the boat at a good 20 m.p.h.

Views of interior and exterior of the limousine cabin with windows and windshield raised as it would be in heavy weather



Cockpit space can be made as comfortable and cosy as a front porch

The popular type of moderate speed cruiser is still a strong favorite

The home-like appearance of the saloon interior is attractive

The motor is located so that there is some freedom possible when it needs looking at

Rexland, a Conservative Popular Type Cruiser

Getting Away From the 30-Mile Boat We Have Something Practical Which Will Do 12 Miles

MUCH is heard about the express cruisers which average from 25 to 30 miles per hour, but not so much is heard about the more conservative and more popular 12-mile cruiser, which can be built at a price within the range of the average man's pocket-book, and which can be operated at a cost not greatly in excess of that of the average touring car.

Four duplicate boats were built to exactly the same specifications and at the same time—the other three being named and owned as follows:

Acorn, owned by Bertram G. Work of Oyster Bay, N. Y.

Anna, owned by H. E. Raymond of Shelter Island, N. Y.

Kill Kare, owned by H. H. Halterman of Shelter Island, N. Y.

A typical example of this very serviceable and satisfactory type of boat is Rexland, owned by George M. Landers of Shelter Island, N. Y. Rexland is a 45-foot by 8-foot 6-inch by 2-foot 8-inch cruiser, designed and built by the Greenport Basin & Construction Company, and is powered with a medium-speed Model MM-4 Van Blerck engine, which gives this boat an average speed of 12 miles per hour.

These boats are designed and built for general service and are sturdily enough constructed and well enough designed to go anywhere in practically any kind of weather.

The interior arrangements allow for two good-sized, well-lighted and well-ventilated cabins, in addition to a roomy cockpit in the stern.

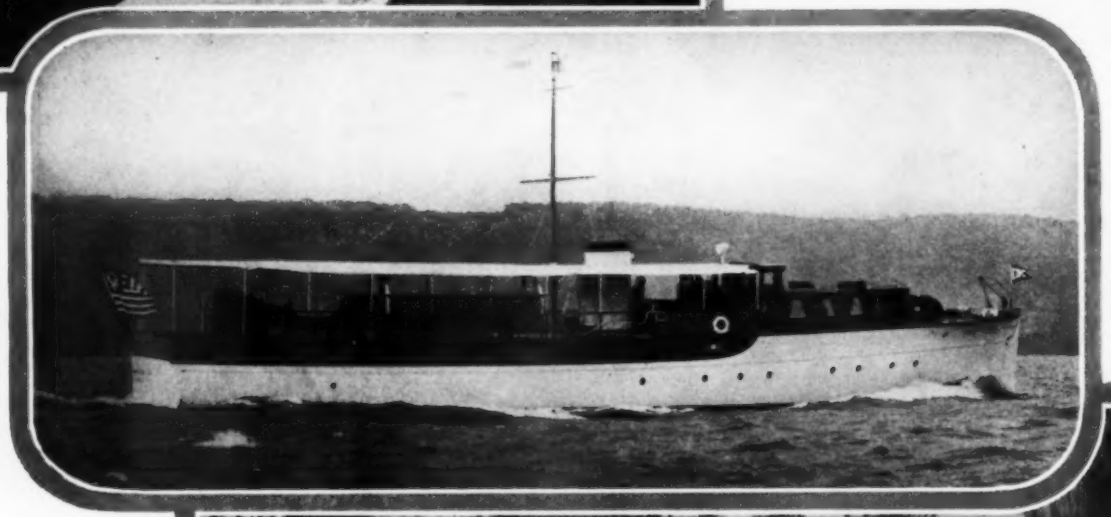
Photographs by M. Rosenfeld

A New Tamarack IV

Handsome Craft Completed at Consolidated Shipbuilding Corporation to Replace an Earlier Yacht of the Same Name

Tamarack IV is of the raised deck type with living and dining rooms in the deck house forward. The galley shown is below and accommodates a large range and a hot water heating plant. This is necessary since the boat will be in service the year around

Tamarack IV was designed and built for Dr. H. N. Torrey of Detroit by the Consolidated Shipbuilding Corporation, Morris Heights, N. Y. All exterior joiner work and decks are of teak. The bridge is enclosed with a permanent roof and glass sides

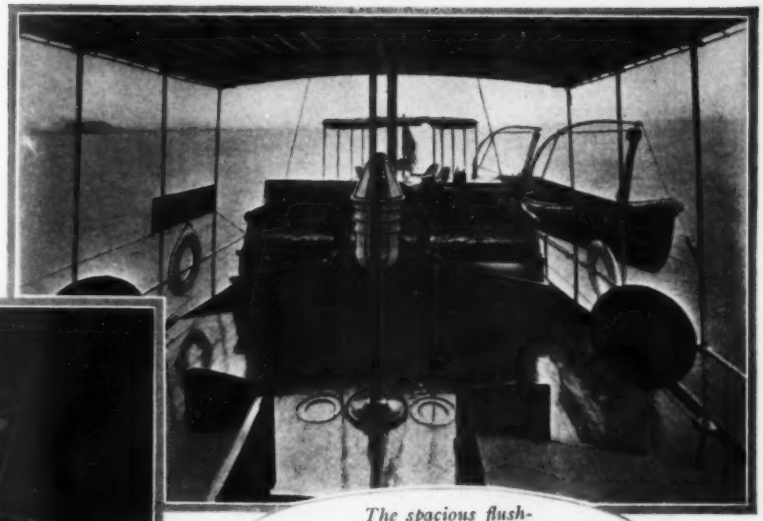


Interior of the living and dining saloon which is forward. Every convenience has been provided for extensive cruising. The motor equipment consists of two 300 h. p. Speedway gasoline engines which produce a speed of about 18 miles. Tamarack IV is 99-feet long and 16 feet in beam. She is up to the minute in all details

Marie B II

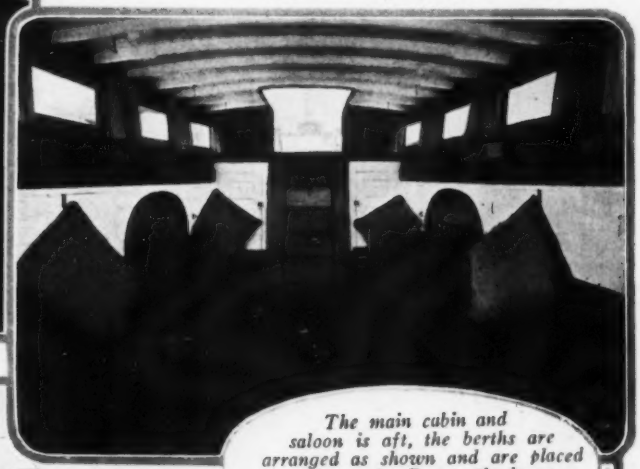
An Attractive Sea-Going Cruiser Built From Hand Designs

Photographs by E. Levick.

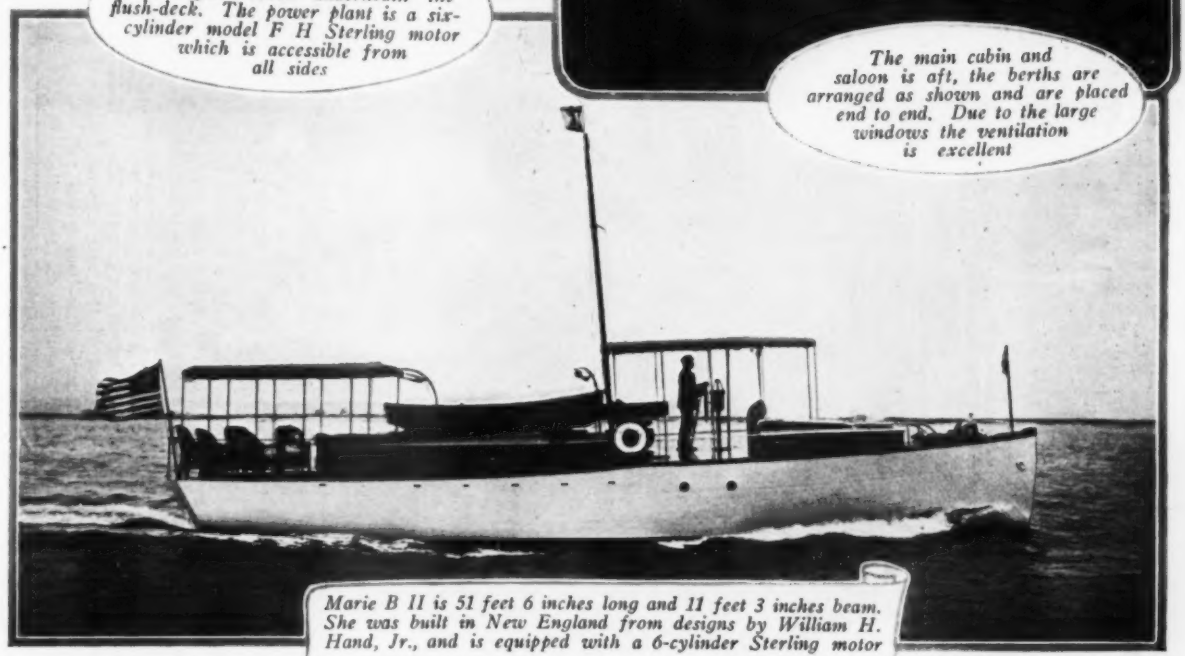


The spacious flush-deck of Marie B II with the helmsman's position and the large comfortable deck-settee just beyond. Ample deck space here and at the stern is appreciated

Interior of the engine room underneath the flush-deck. The power plant is a six-cylinder model F H Sterling motor which is accessible from all sides



The main cabin and saloon is aft, the berths are arranged as shown and are placed end to end. Due to the large windows the ventilation is excellent



Marie B II is 51 feet 6 inches long and 11 feet 3 inches beam. She was built in New England from designs by William H. Hand, Jr., and is equipped with a 6-cylinder Sterling motor

Cruiser Comfort

Standardization Results in the Ideal Boat

The after cabin, looking forward, showing furnishings

Interior of the enclosed bridge, looking aft

Interior of the enclosed bridge, showing helmsman's position

IN line with the tendencies of modern times standardization promotes boat building progress. Among the exponents of quantity production and standardization are the Rochester Boat Works, who are turning out completely equipped cruisers in standard lengths of 36, 40, 45, 50 and 55 feet equipped with their exclusive type of enclosed bridge. Every advantage is taken of the method of construction to turn out a high-grade boat which is complete and ready for service when it is received.

The illustrations shown are of a 45-foot cruiser recently delivered to a prominent Detroit yachtsman. The arrangements provided in a boat of this size are unusually complete. Ample attention has been given to the possibilities of long-distance cruising and the galley equipment and accommodations will permit comfortable living aboard for an indefinite period. A small coal range permits of elaborate cooking and at the same time furnishes heat for cold weather. This addition makes possible the more extensive use of these boats, as a little heating in the early spring is most welcome.

In design the hull of these boats follows the generally known concave V-bottom type, and their excellence in a seaway has been thoroughly demonstrated on numerous occasions. Materials entering into the construction are carefully selected and of ample dimensions. The boats, while heavily constructed, do not suffer in loss of speed. moderate power being sufficient for most requirements. At the forward sections the wide flare at the deck prevents flying spray from reaching the bridge and insures a dry boat under all conditions.

All cabin arrangements are designed for the utmost comfort. Accommodations are provided for a large number of persons, which is further accomplished without undue crowding at any point and without the sacrifice of solid comfort at all times.

Transco II, on her trial trips from Kingston to Albany on the Hudson River

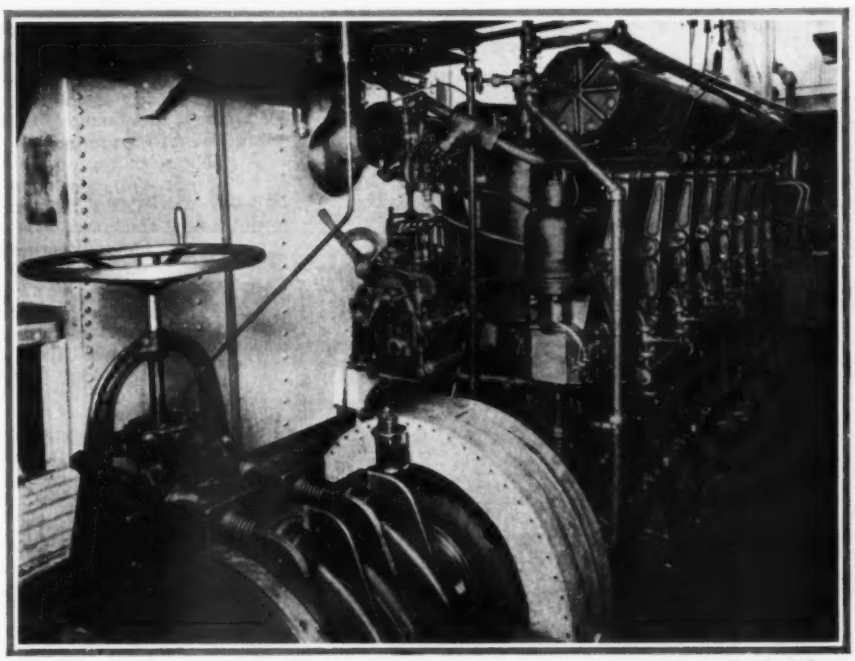
Transco II, a Successful Diesel Tug

One of Three New Tow Boats Engaged in Heavy Service on the Hudson River and Erie Barge Canal

THERE has just been placed in service on the Hudson River and Erie Barge Canal the first of three similar Nelseco Diesel powered tow boats. Transco II, after exceptionally severe trials, is now in regular service moving large tows from New York clear through the canal to Buffalo. She is 67½ feet in length and 17½ feet beam. It has been felt that the installation of this type of power equipment on work of this kind was experimental. The successful performance of the boat has dispelled all doubts as to her ability, and it is probable that the older steam powered tow boat will ultimately be displaced. On steam tugs of the size suitable for use on the canal it is necessary to stop for fuel at least once every twenty-four hours. An actual test in the operation of Transco II with a tow shows the operating cost of fuel to be about sixty cents per hour. Steam tugs of similar power will consume coal to the value of about $4.00 per hour at present prices. The time saved by avoiding the many stops for fueling and disposal of ashes is considerable, and the fact that the Diesel powered tug is ready for operation at full power within a few minutes after the word is given is also an important consideration.

The engine installed in Transco II is a Nelseco heavy duty, four-cycle, reversing gear type, operating on the Diesel principle and using crude or fuel oil for fuel. There are eight cylinders, 9 inches diameter and 12½ inches stroke. The power developed at 350 r.p.m. is 240 h.p.

On a recent trial Transco II took a tow of five barges up the Erie Canal. At Little Falls an eastbound tow was met and the tow boats were exchanged. Transco II took the eastbound fleet all the way through to New York. On this trip the engine performed perfectly, and the tow was handled in better shape than had been possible with steam tugs.



The tug is equipped with a 240 H.P. Nelseco Diesel engine with eight cylinders of 9-inch bore and 12½-inch strokes; develops its power at 350 r. p. m.

Roamer III, a new 54-foot express cruiser just completed by the Great Lakes Boat Building Corporation, for Earl Holley of Detroit

Come, Play With These New Cruisers

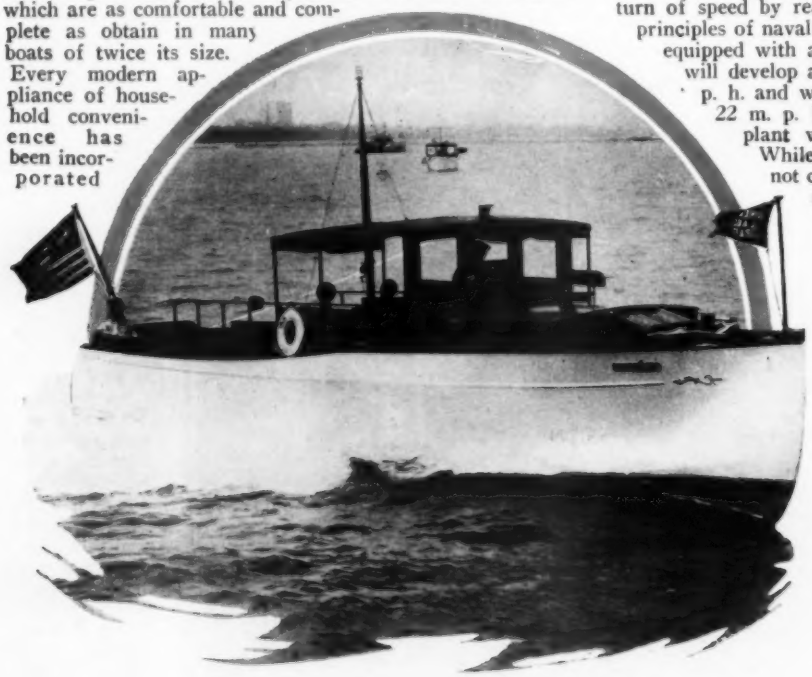
Great Strides Have Been Made in Recent Years in Accommodation, Comfort and Performance in the Present-Day Express Cruiser

THE lack of first hand information concerning the recent developments in express cruiser design has led many to hold to the old fashioned idea that an express cruiser is a light shell with crowded quarters and an entire absence of comfort and convenience. This is far from being the case as is shown by the express cruiser Roamer III which has just been completed and delivered to Earl Holley of Detroit by the Great Lakes Boat Building Corp. of Milwaukee. This boat in 54-foot of length and a displacement of 30,000 pounds, offers accommodations which are as comfortable and complete as obtain in many boats of twice its size. Every modern appliance of household convenience has been incorporated in this craft. There is a hot and cold water system operated by an automatic pressure pump, which dispenses with the use of hand pumps. A complete electric plant furnishes current for lighting, heating and ventilation. There are shower baths, and screens throughout, deep box spring berths handsomely upholstered, all arranged to be thoroughly workable and practical.

For seaworthy performance the modern express cruiser cannot be excelled. Boats of this type are today heavily built to withstand hard service and also develop a good turn of speed by reason of the application of the modern principles of naval architecture. A boat of this type when equipped with a pair of six cylinder Sterling engines will develop a maximum speed of from 25 to 27 m. p. h. and will cruise day in and day out at 20 to 22 m. p. h. with full assurance that the power plant will continue to function indefinitely. While the maximum speed requirement is not called for continuously it is always available when necessary to make hurried week end trips or to get out of the way of an approaching squall.

The smaller boat is one of the 42-foot day cruisers also built by the Great Lakes Boat Building Corporation. Due to the establishment of summer homes on water fronts far removed from the business centers, a need for a fast reliable boat of this type has been developed. The cruiser shown is provided with ample freeboard and structural strength. Its power plant is accessible and of ample size to permit the boat to negotiate any waters in all weathers and at the same time gives it the handling qualities of a runabout.

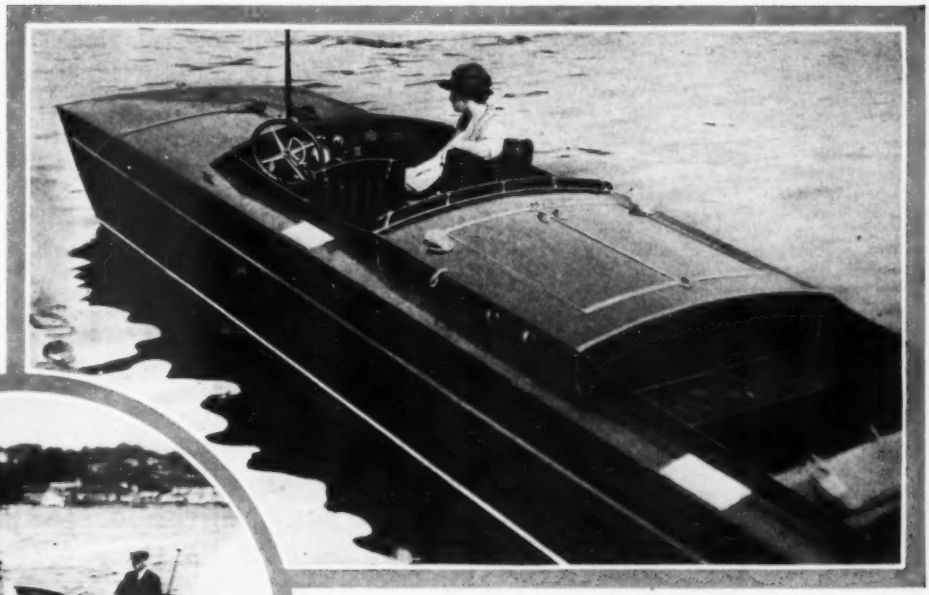
When fitted with a six-cylinder GR Sterling engine 23 m. p. h. is easily attained. Conversely 3 m. p. h. is available for trolling without a rough spot throughout the entire speed range.



An excellent type of a modern pleasure craft is this 42-foot day cruiser

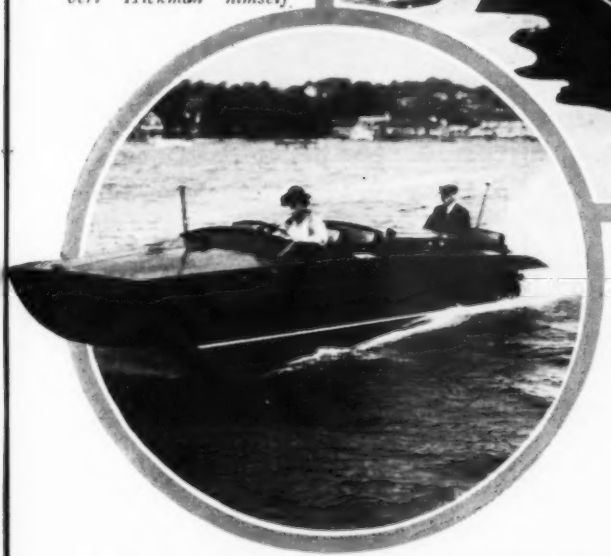
A Sportsman's Sea Sled Runabout

Novel Design Brings Out Fine Points of Sea Sled Hull When Adapted to Southern Fishing and Gunning



The standardized 35 mile Sea Sled runabout at rest. These boats are powered with a single 125 h.p. Hall-Scott marine engine which will be the standard equipment

The standardized Sea Sled below appears to be driven by Mrs. Albert H. Hickman, while the invited guest in the stern is none other than Albert Hickman himself

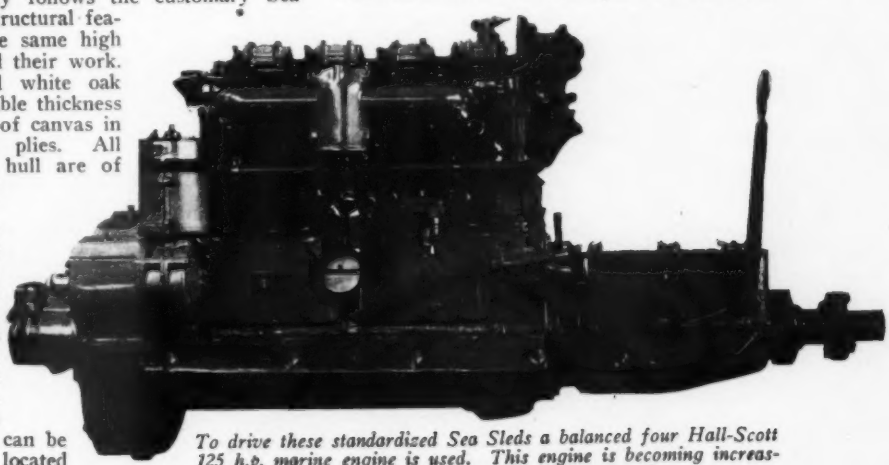


INAUGURATING a new series of standardized Sea Sleds, the Sea Sled Company, Inc., of West Mystic, Conn., have begun production on 25 foot hulls for general all around sporting purposes. These boats are built with an overall length of 25½ feet and a beam of 6 feet. Their construction naturally follows the customary Sea Sled principles, while the structural features are maintained at the same high point as is customary in all their work. The frame is of selected white oak while the planking is a double thickness of mahogany with a layer of canvas in marine glue between the plies. All fastenings throughout the hull are of copper and brass, the rivets being burred.

An unusual feature in these boats is the fact, that the driving position is in the forward cockpit. Five persons can be accommodated here which includes the operator, while the after cockpit will provide for three additional passengers. If required, two or three additional persons can be carried on the locker seat located at the forward end of the after cockpit. All of the seats are well upholstered, both on the seats and backs.

While this hull has been particularly designed to take care of the demand for a fast sporting runabout suitable for gunning and fishing excursions on shallow waters, its speed, which is in the vicinity of 35 miles is quite high. It is by no means a racing craft but combines in a very satisfactory combination all of the many features which are provided in a universally good boat. At speed, the draft is 13½ inches, which increases when at rest to 17½ inches.

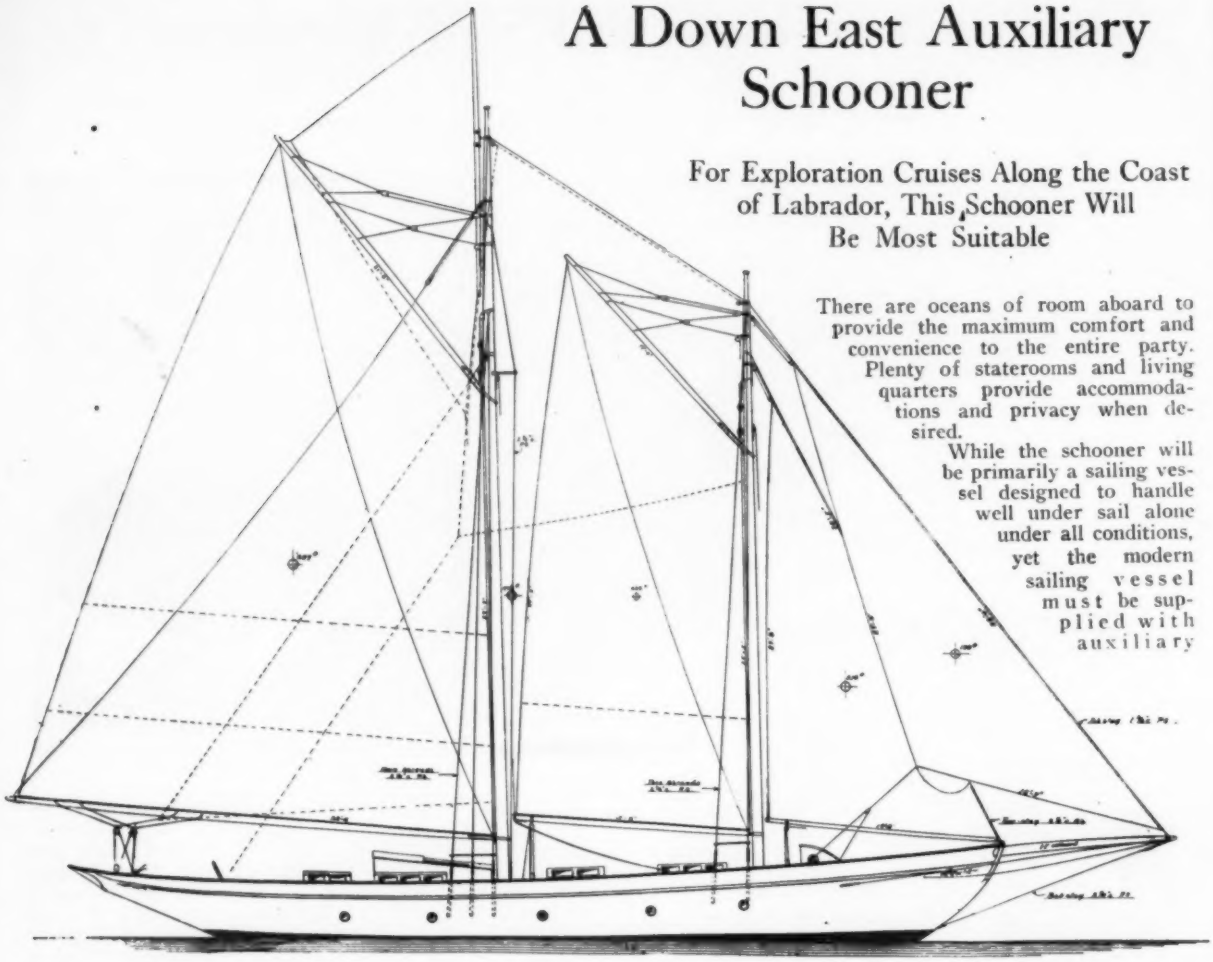
The motive power is one of the regular Hall-Scott balanced four marine engines of 125 h.p. This motor drives the twin propellers through suitable gearing and the remarkable efficiency and speed attained is a testimonial to the superior features of the hull and the stamina of the engine. These boats plane beautifully and the acceleration is very gradual and uniform. Since these boats are intended to be a standardized product they will be available for use on many of the small lakes and rivers and can be used through the southern inlets and on the open ocean as well.



To drive these standardized Sea Sleds a balanced four Hall-Scott 125 h.p. marine engine is used. This engine is becoming increasingly popular for reliable, fast work

A Down East Auxiliary Schooner

For Exploration Cruises Along the Coast of Labrador, This Schooner Will Be Most Suitable



There are oceans of room aboard to provide the maximum comfort and convenience to the entire party. Plenty of staterooms and living quarters provide accommodations and privacy when desired.

While the schooner will be primarily a sailing vessel designed to handle well under sail alone under all conditions, yet the modern sailing vessel must be supplied with auxiliary

ONE of the most successful and striking designs of the season has been completed by John G. Alden, of Boston. This is an auxiliary schooner designed for George Williams of the J. B. Williams Soap Company.

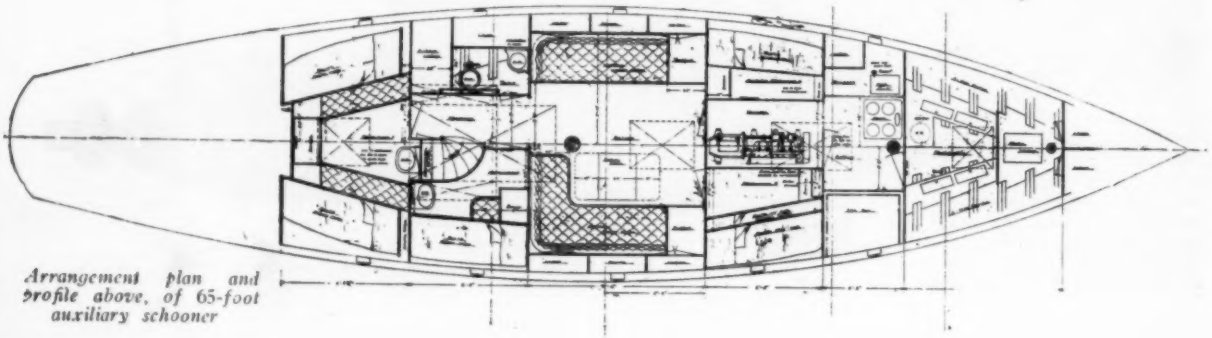
Of substantial construction this schooner has been designed for hard, continuous service. Her displacement is approximately 30 tons and the principal overall dimensions are:—length overall 65 feet, waterline length 45 feet, beam 15 feet, and draft 8 feet. The boat was built in the yards of Frank C. Adams, of Booth Bay, Me., and the workmanship is of the same high quality which distinguishes all these down east boats.

Strength and reliability have been the main factors in determining the choice of size and type of boat. It is intended that this schooner will be used for an extended cruise along the rugged coast of Labrador during the spring and summer months. For conditions as they will be found on a cruise of this type the schooner makes the most desirable craft.

power for the times when the winds go elsewhere to blow. Under these circumstances the auxiliary motor is relied upon to do the work. The designer has selected a four-cylinder 40 h.p. Frisbie Valve-in-Head motor, equipped with a Leece-Neville electric starting and lighting outfit as the proper power plant for the boat. This motor equipment has proven thoroughly dependable and efficient on trial trips and the expectations of the designer have been exceeded.

The bore and stroke of this Frisbie Valve-in-Head motor is 6 x 6 inches and it develops its power at 600 r.p.m. Its weight is only 1,200 pounds and the space that it occupies in the engine-room of a boat of this size is negligible.

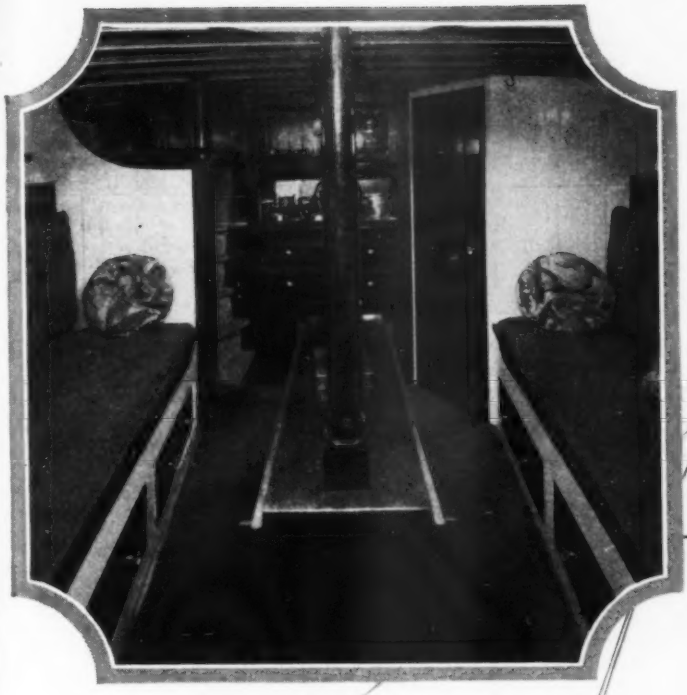
This motor has been particularly adapted for heavy duty service. It has been provided with three main bearings accessible through four extra large hand hole plates. On account of its slower speed possibilities it is well suited to the hard work which will fall to its share. Beside the low fuel consumption of these engines, their reliable operation commands them for this service.



Arrangement plan and profile above, of 65-foot auxiliary schooner

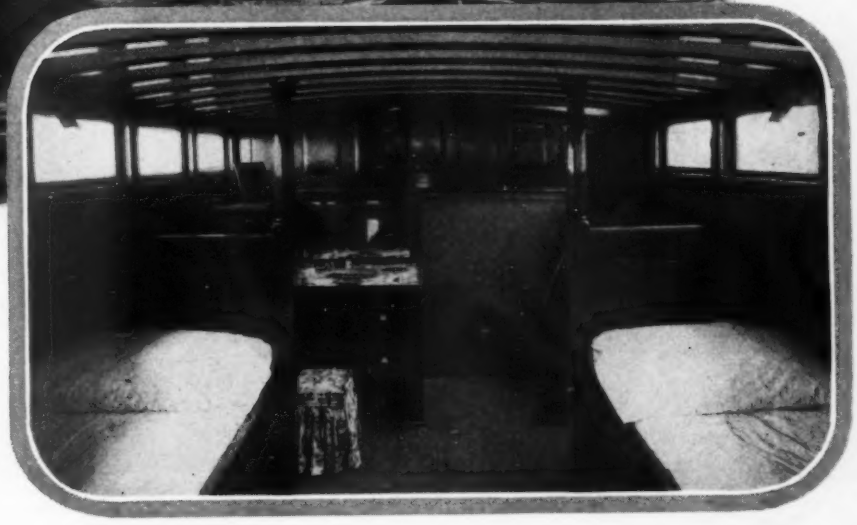
Alice C, a Husky Cruiser

A Substantial Craft of 58-Feet Length, Powered With a Scripps Engine, Built in the Owner's Yard



Roomy and comfortable interior spaces contribute largely to the success of the boat. Her owner, James McKenzie is president of the Jersey City Dry Dock Company was unable to find a boat to suit his needs. In order to get just what he wished he had Alice C built in his own plant. His ideas of a proper boat called for a large comfortable craft which should be seaworthy and moderately fast

Alice C, was designed by S. J. Ryder and is 58-feet overall length, 12-feet 6-inches beam and is constructed on V-bottom lines

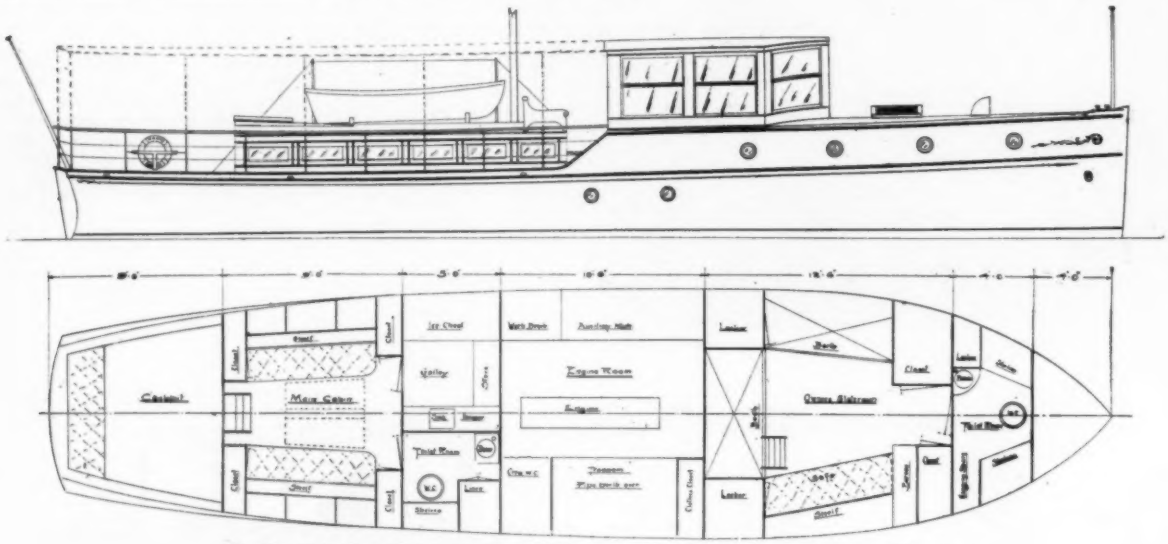


The after end of the main saloon shows an effective arrangement of furniture. In order to secure the required speed and power Mr. McKenzie selected a six cylinder Scripps engine of 4½-inch bore and 6-inch stroke. In addition a 32 volt lighting set is carried which furnishes auxiliary power. Fuel tanks are provided with a capacity equal to 40 hours of continuous running

A Pair of New Fast Cruisers

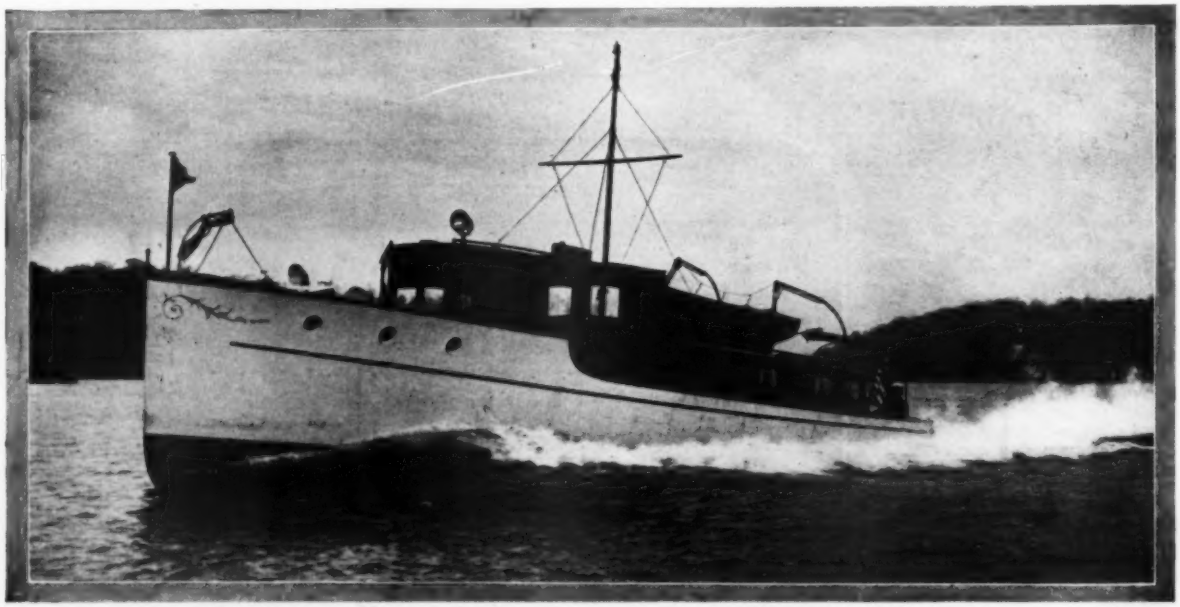
Drawings and Illustrations of Some New Express Cruisers Showing the Popular Trend in Modern Boats Running in the Same Direction

AMONG the season's new cruisers was this fast yacht designed by Chas. D. Mower, of New York City. This boat, 54 feet long by 13 feet beam, embodies all the most modern features. The enclosed bridge is one of these and is apparently destined to be the regular thing on all new boats. Accommodations for the owner comprise a large stateroom with all conveniences forward and a main saloon aft which is directly accessible from the galley on the port side, amidship. The engine-room and crew's quarters are in the beamiest portion of the ship and are separated from the forward and after quarters by water-tight bulkhead.

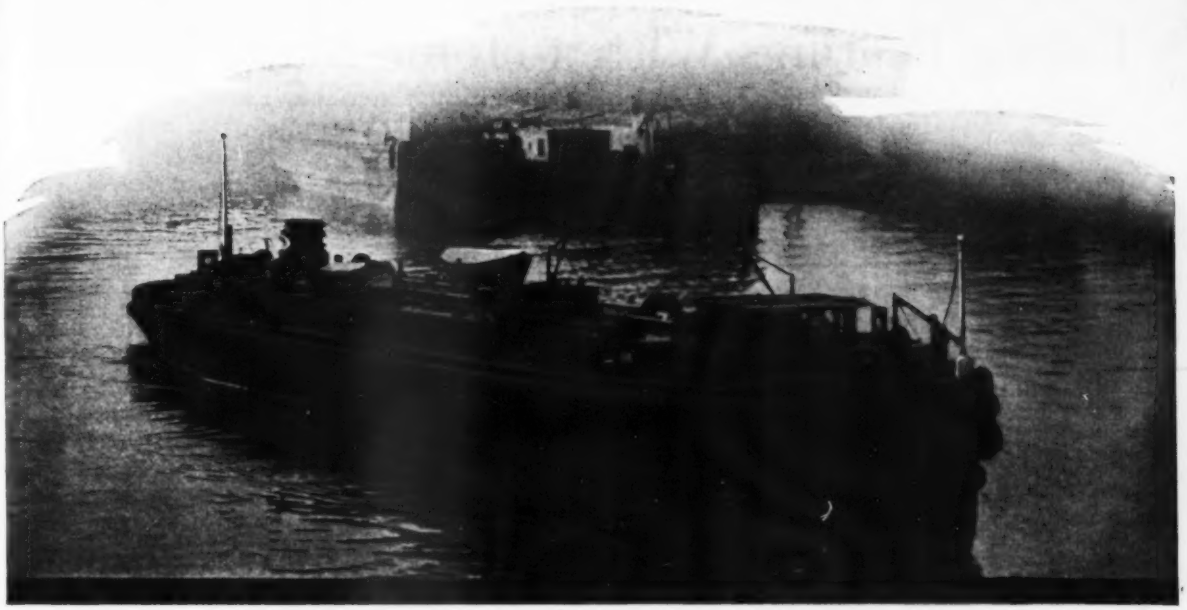


Profile and plans for new 54 x 13-foot cruiser designed by Chas. D. Mower

THERE can be seen at Miami the express cruiser Toxaway, delivered to J. H. Nunally at the beginning of the Florida winter season. Built by the Consolidated Shipbuilding Corp., Morris Heights, N. Y., Toxaway is 52 x 11 feet. Two eight-cylinder 200 h.p. Speedway Model M gasoline engines furnish the power to drive the boat at 27 m.p.h. Fuel supply for a cruising radius of 500 miles is provided. The enclosed deckhouse is most comfortable and is provided with an athwartship seat at the after end. The owner's quarters are entered from the cockpit by means of a companionway. Built-in berths are arranged on both sides with lockers fitted with artistic leaded glass doors. The advance design of Toxaway, utilizing to the utmost all available space in 52 feet, has filled a need in the desires of yachtsmen and she has attracted unusual attention at Miami.



J. H. Nunally's express cruiser Toxaway, built by the Consolidated Shipbuilding Corp.



One of the fleet of gasoline propelled barges used along the Barge Canal for oil distribution

Economical Transportation for Oil

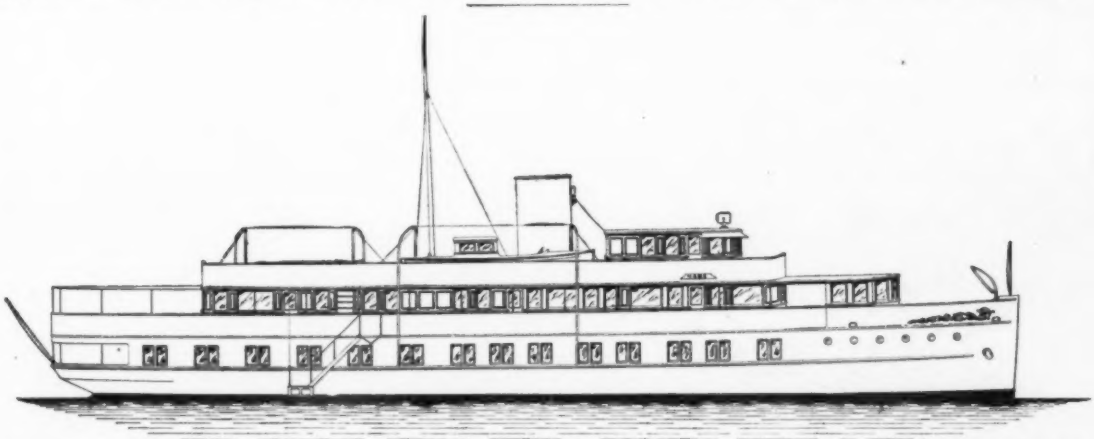
The Distribution of Oil Along the Route of the New York State Barge Canal Successfully Accomplished by Self Propelled Barges

AT the close of a busy season of navigation on the Erie Barge Canal, the fleet of Standard Oil canal barges is again ready for a busy winter. During the winter now coming, these boats will be operated on the waters of Long Island Sound and distribute oil and gasoline to the various stations. The work during the summer consists in carrying oil from Albany to the west, supplying the many stations along the canal. In previous years these boats have operated with an efficiency and dispatch which is well remembered by all experienced shippers and transportation men who have observed their work.

To indicate the magnitude of this one problem, it is only necessary to cite that the canal tonnage in oil for 1922 was just about double that of 1921. The Standard Oil Company's success must be credited in some measure to the development of the most complete and efficient transportation system known to the world. Unquestionably they are the world's greatest transportation experts, the shrewdest employers of transportation agencies.

The boats for the canal were especially designed for this service. They are 156 feet long, 28 feet beam, and of a maximum draft for the canal depth. Each one is propelled by a 300 h.p. six-cylinder 12- by 14-inch air starting and reversing Standard engine built by the Standard Motor Construction Company, and this engine drives them to the limit of speed allowed for the canal.

Besides the 300 h.p. Standard engine, each barge has a 50 h.p. Standard engine-driven duplex pump set, a 50 h.p. Standard engined rotary pump set, a 20 h.p. Standard 10 k.w. generating set, and an 8 h.p. Standard air compressor and bilge pump set. The steering gear is electrically operated as are also the winches for the anchor chain.



A new power house boat just completed at the Consolidated Shipbuilding Corporation, New York, for John Ringling, is the last word in marine construction. She has a steel hull of 125-feet length with a minimum draft. The design was prepared by Henry J. Gielow, which ensures a most up-to-date vessel. A pair of six-cylinder Nelesco Diesel motors of 180 h. p. each will drive the yacht 13 to 14 m. p. h. Full mechanical auxiliary equipment is also provided.

Taking Bearings With a Home Made Pelorus

A Few Simple Tools, a Small Amount of Material and a Little Skill Combine to Produce a Useful Instrument

By L. A. Kumm

HAVE you ever cruised away from your regular cruising grounds? That is, away from the bays, coves and home waters, where you know practically every shoal and rock. What I mean is, have you cruised along a strange coast where you did not know any more than what the Light and Buoy list, or Coast Pilot could tell you? If so, then you must know that peculiar feeling that comes over you when the Coast Pilot says, rocks about ⅛, ½, or 1 mile from shore, and you do not know just how far you are from shore. You feel just like rolling up in a ball and jambing your big toes in your ears for fear you will hear the crunch of rocks on the keel. Do you know how far you are from the lighthouse and buoys? Can you get your fix from them? No! Well, it was not until lately that I could with any accuracy. For a long time a pair of copper tacks and a pair of anchor flukes were my guide. The tacks were on either side rail, and the anchors were lashed to a pair of permanent blocks on the deck so that the aft fluke happened to come about four points off the bow. This was near enough for me at that time. But MoToR BoatinG's Navigation Courses came along, then I found out I was not as close to my fearings as I should be. Strange what a little nautical reading will do. Then I wanted a pelorus but ye gods, the cheapest I could get was $45.00 or at least a combination of brass and glass that screwed on the compass box.

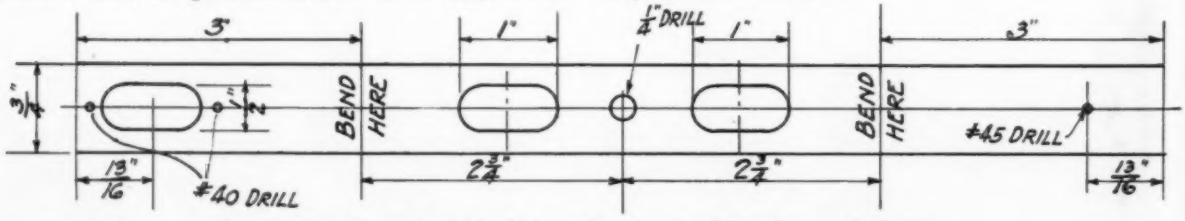
The simple, easily constructed bearing finder

This was too much for an ordinary boat bug. So one night as I sat at my desk with my copy of *Small Boat Handling* an idea of a range finder took shape in my mind, one that would fill the bill and at the same time be cheap. How is this $0.96, yep! here it is.

1 turned hardwood block	$ .50
1 piece of brass ⅛" x ¾" x 11½"	.15
1 wing nut 3/16 x 32	.03
1 brass bushing	.10
1 brass standard	.10
1 3/16 x 32 brass machine screw	.03
3 3/16 x ½ brass washers	.05
1 4-inch compass card	
$0.96 Total	

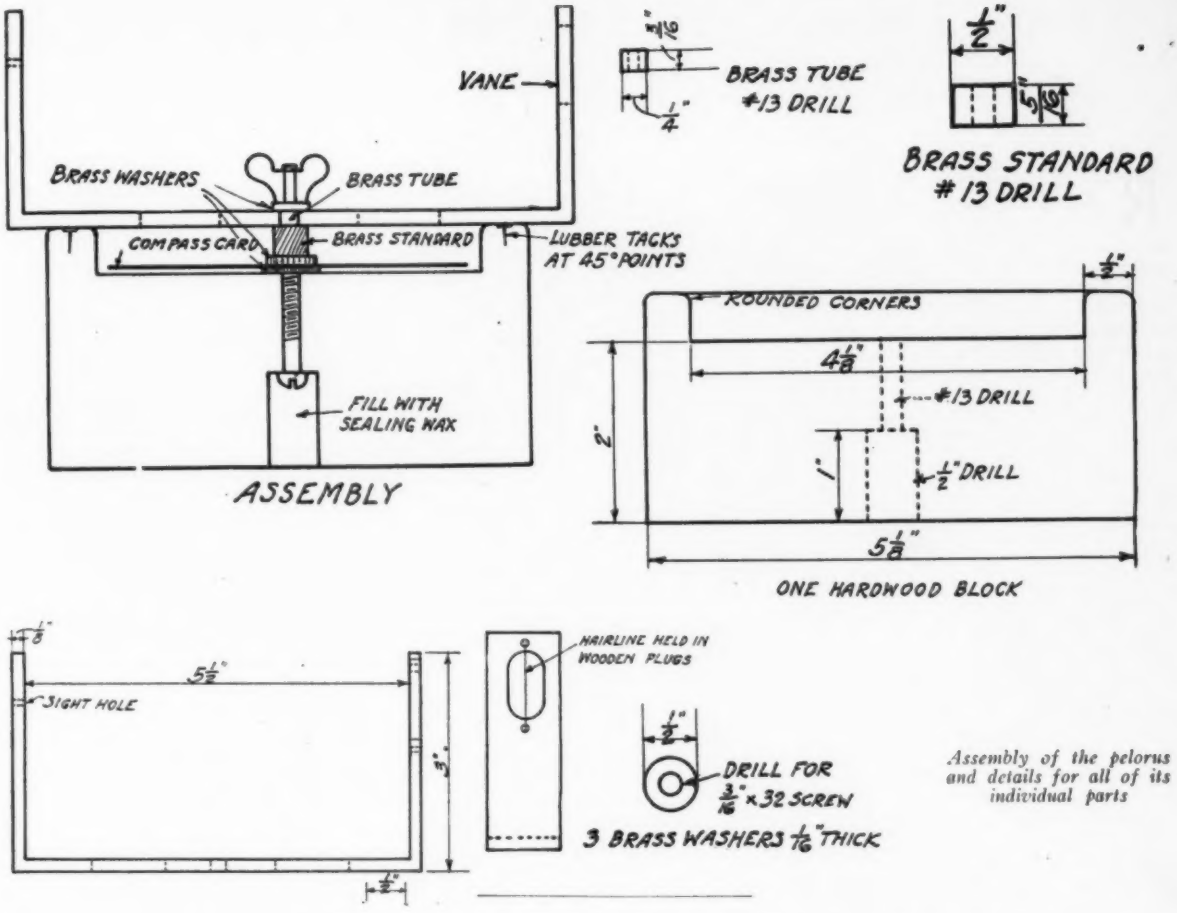
For the compass card, get a United States Power Squadrons deviation card. Cut out the inner compass, or send $.20 to the Wilcox Crittenden Co., and get a course protractor, glue this compass card to the white backing that comes with it. The drawings are very simple to follow and the photograph will explain all that there is to it. There is only one thing to be careful about and that is, be sure that when the wing nut is screwed down tightly it will hold the compass card, but will let the vane move freely. This can be adjusted by careful filing of the bushing. The bearing finder is used as follows:

Find on the shore two objects, a lighthouse, church steeple or any other object that is shown on the chart, if possible at least on a 30° and not more than 150° bearing from the boat. Set your bearing finder compass card so it will read or point the same direction as the boat compass, hold it steady so as not to change its course direction from that of the boat compass. Swing the vane around to the first object and read the card beneath the hair line; then swing it to the second object and get this reading, transfer these readings to the chart with the parallel ruler, prick off the miles and there you are. The position of the boat is where the lines intersect. Be sure that you correct the bearings so that they will be either true or magnetic, according to whether they are to be plotted by the true or magnetic compass rose of the chart.



Layout for the brass standard which can be cut out and bent from a single piece

That is, if observed by compass apply deviation and variation to obtain the true bearing, or deviation only to obtain the magnetic. The best way is to set the bearing finder for the true or magnetic, which ever reading is required, and no further correction is necessary. The bearing finder can be used for bow and beam bearing, doubling the angle, and all other methods that are possible with a higher priced instrument. It is very important to know just where you are along a strange shore and a great help to those who hope to pass the examination for membership in the United States Power Squadrons as it gives you practice in correction for deviation and variation and the different angles used in piloting by shore bearings.

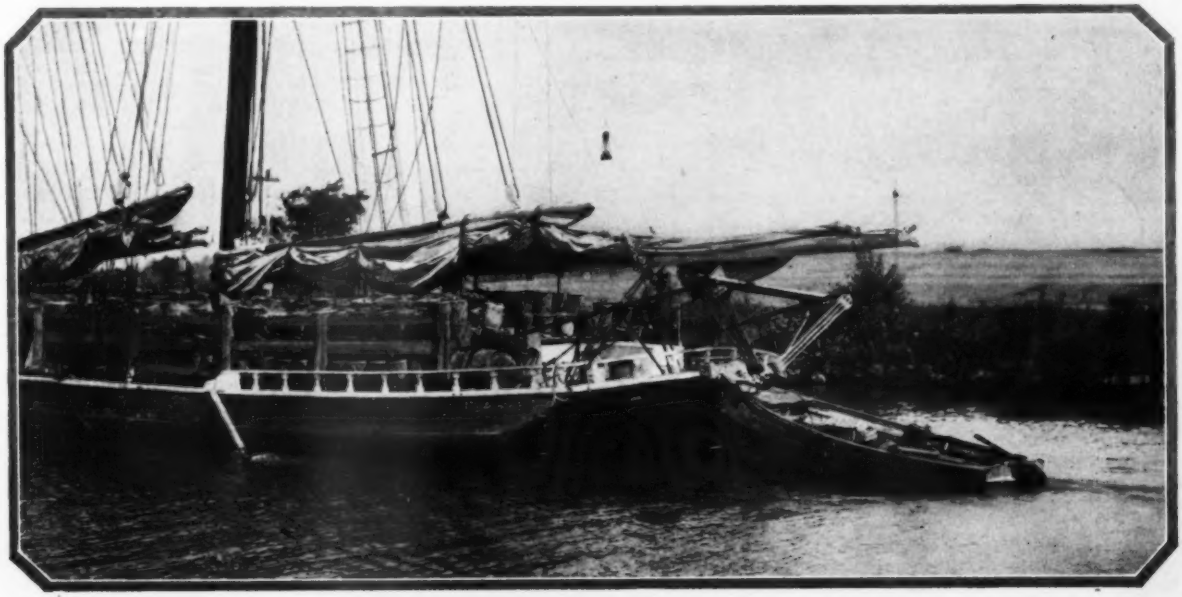


Assembly of the pelorus and details for all of its individual parts

How Schooners Get Along Without Power

Substitute For An Auxiliary Engine On the Large Vessels Is A Sturdy Tender Provided With A Powerful Gasoline Engine

Photograph by Pearce



A common method of propulsion adopted by small coastwise sailing schooners has the advantage of being easily installed in the small boat. A husky single cylinder engine of substantial proportions serves to drive the tender when used as such, and also pushes the larger vessel at a respectable pace when the occasion requires

Frances, An 18-Foot Cat Boat

An Unusual Design for a Successful Little Boat Particularly Adapted to Class Racing in Clubs and Associations

Designed Exclusively for MoToR BoatinG

By Charles D. Mower

RESPONDING to the frequent demands for designs of a small sail boat in addition to the motor boat designs which are a regular feature of MoToR BoatinG, we give in this issue the first design of a new series which will appear at intervals. It is unnecessary to dwell on the fact that Chas. D. Mower, the designer of these boats is one of the foremost designers of small boats in practice today. Many of his successful designs are afloat and rendering good service in all parts of the world and with the wide distribution which these plans will receive, we predict that large numbers of these little boats will be added to the fleet of his boats.

This design has been prepared to meet a demand for a small boat for day sailing that will be within the capability of the amateur builder and give a boat that will be easy to build, handle well, be fairly fast and suitable for an outboard motor as auxiliary power.

In the choice of a type of hull to meet these requirements the designer has been largely influenced by the successful performance of a one-design class of sixteen footers known as Plandome Flappers. These boats are used on Manhasset Bay and Long Island Sound and have proven most satisfactory for racing and afternoon sailing. They are sailed by the young boys and girls as well as by the grown ups and are as safe as any small boat can be as they are unballasted and cannot sink so that in the event of a capsize nothing worse than a wetting can happen to the crew. While it is possible to capsize any centerboard boat the design given herewith will be stiffer and abler than the average boat of her size and type and with proper handling will carry her sail well in strong breezes.

The cockpit is large enough to accommodate five or six persons for an afternoon sail and there is ample room on either side of the centerboard trunk for a couple of boys to sleep with a shelter tent over the boom so that there are possibilities for camping cruises that are limited only by the imagination of the owner. By unshipping the rudder the boat can be run up on any sheltered beach and on account of her shallow draft can cruise in many places that are inaccessible to the larger boats.

The design can be adopted successfully by Yacht Clubs as a one-design class, as the Plandome Flappers, the Larchmont Cats, the Seawanhaka Kittens and the Marblehead Fish Class are all of similar type and have furnished fine sport for their owners.

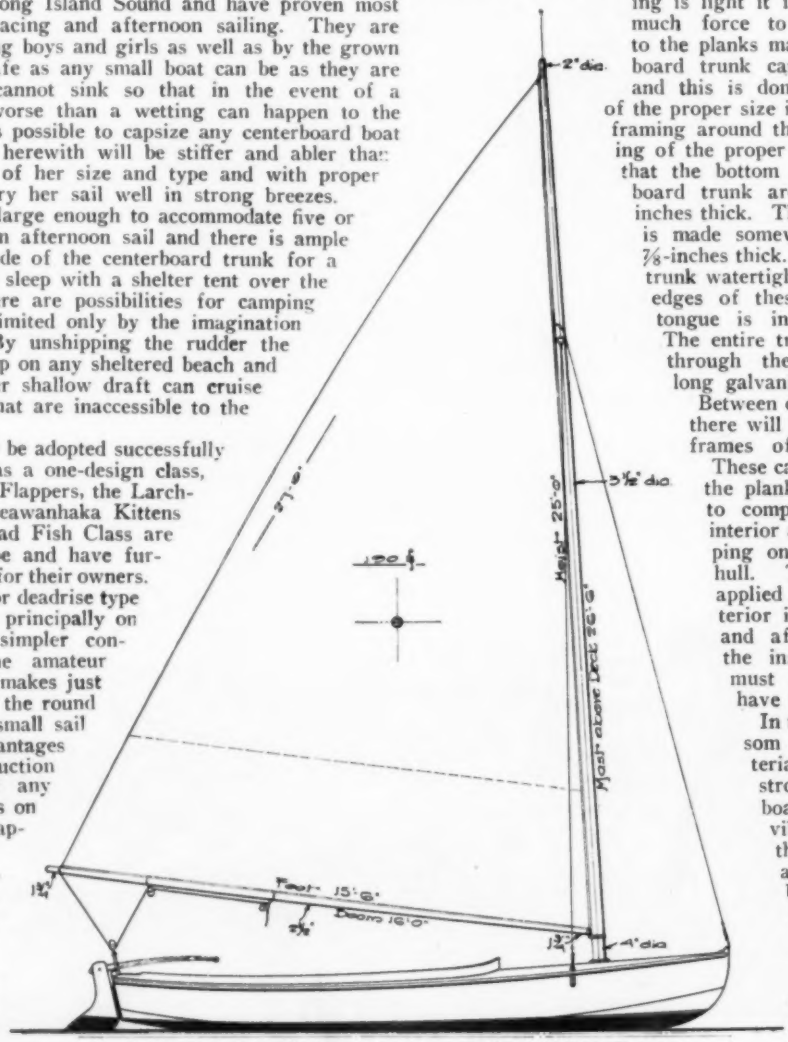
The V bottom, or deadrise type has been selected principally on account of the simpler construction for the amateur builder but it also makes just as good a boat as the round bilge type for a small sail boat and the advantages of easier construction more than offset any possible objections on the score of appearance.

Complete specifications are given so that anyone who does not wish to build the boat himself can turn the plans and specifications over to a regular boatbuilder and be assured as good a boat as if it had been specially designed as an individual order. While the construction of a little boat like this should present no unusual difficulties in the building, it may be perhaps advisable to add a few remarks on the work. Complete building instructions are unnecessary since MoToR BoatinG publishes books on boat building which give explicit instructions for the various steps.

Naturally the first requirement for building any boat is to have a suitable place where the work may be carried on. Then it will be necessary to prepare molds for each of the several station points, using the information contained in the table of offsets on the drawings. After these are all completed they must be secured in proper alignment on the keel and tied together fore and aft with suitable stays. The chine piece and the clamps can also be fitted and bolted in place as the work progresses. It will not be long before the hull is ready for the planking which is applied in the usual manner. The joints between the plank can then be lightly caulked with spun cotton which should be driven in gently. Since the planking is light it is not advisable to use much force to do this or damage to the planks may result. The centerboard trunk can now be undertaken and this is done by cutting a notch of the proper size in the keel member and framing around the opening with planking of the proper size. It will be noted that the bottom planks in the centerboard trunk are of yellow pine 1¼ inches thick. The balance of the trunk is made somewhat lighter and only ⅞-inches thick. In order to keep this trunk watertight a notch is cut on the edges of these planks and a pine tongue is inserted between them. The entire trunk is screw fastened through the keel member with long galvanized iron screws.

Between each set of main frames there will be inserted two batten frames of ½ by 1-inch oak. These can be put in place after the planking is on. It is well to complete as much of the interior as possible before stepping onto the outside of the hull. The decking can be applied any time after the interior is sufficiently advanced and after all fastenings on the inside, to which access must be had from above, have been secured.

In the vicinity of the transom all fastenings and material should be extra strong. The use of an outboard motor induces some vibration, particularly at the points where it is attached to the transom. Unless all fastenings here are made in good shape, leakage will soon occur at the joints. The flooring of the cockpit is made up of 3-inch white pine slats which are fitted into place.



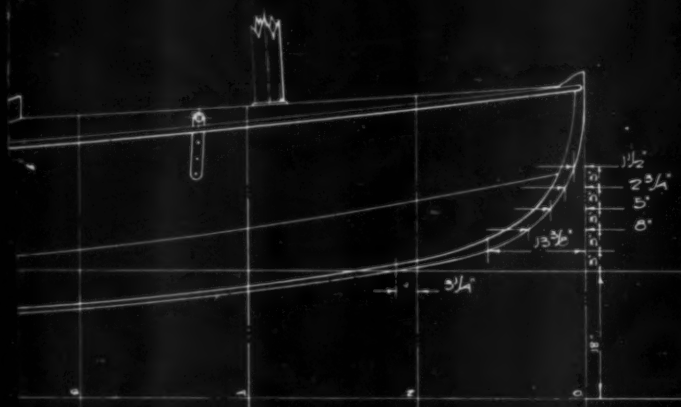
Outboard profile of the 18-foot marconi rigged catboat Frances, designed by Charles D. Mower

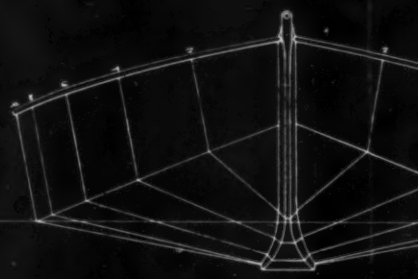
VOLVO 360

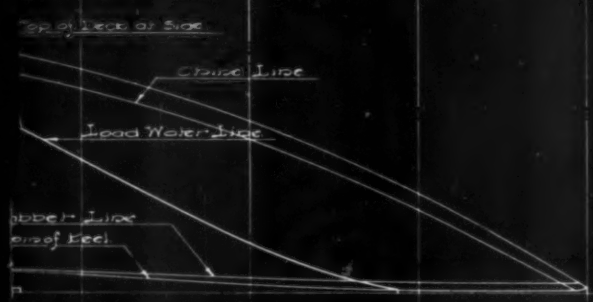
OPERATOR'S MANUAL

V3019

OPEN



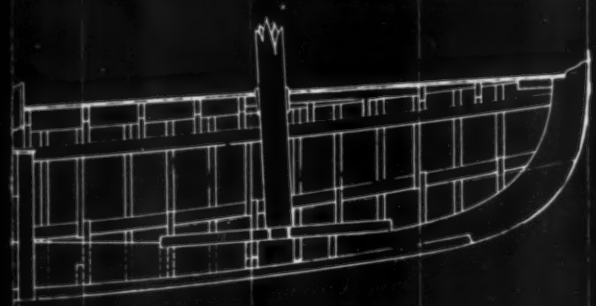


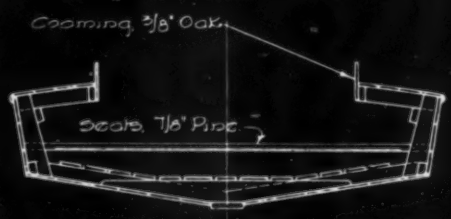


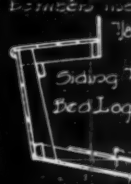
	Stations	0
Sheer Plan	Top of Deck at Side	3' 8
	Chine	
	Rabbet Line	
	Bottom of Keel	
Half Breadth Plan	Top of Deck at Side	
	Chine	
	Rabbet Line	
	Bottom of Keel	

Body — Dimensions Distance

Framing — M
Side piece m
and 3" at ch
Fifth bottom
main frames
Bamboo ma

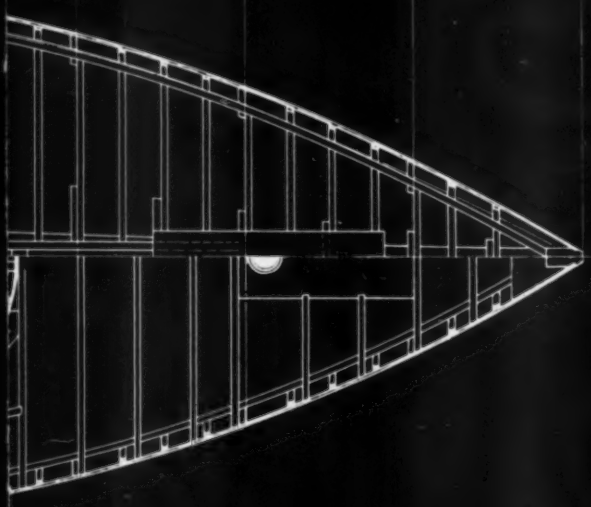


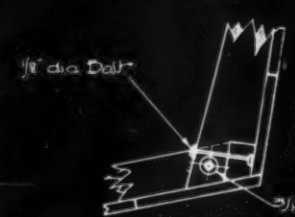




Planking, Cedar: ¾ fin

Section at Station No 16

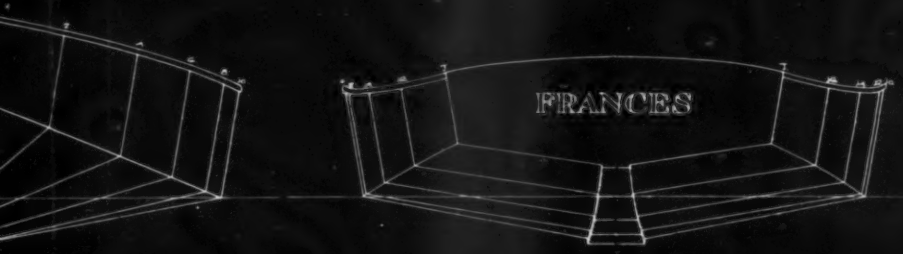




Section in way of Clamp

Section in Way of Chine

MOTOR BOATING'S
FRANCE
Complete How to Build Plans

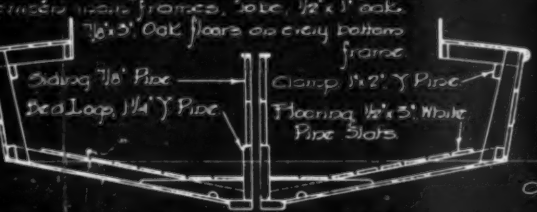


Base Line

	0	2	4	6	8	10	12	14	16	Transom
...Side	3 8 6	3 6 0	3 3 5	3 1 1	2 11 2	2 10 0	2 9 4	2 9 5	2 10 4	2 11 7
		2 4 6	2 2 1	1 9 0	1 6 7	1 6 0	1 6 3	1 8 0	1 10 5	2 1 2
...ine		1 7 5	1 3 7	1 1 3	1 0 1	0 11 7	1 1 0	1 3 1	1 6 5	1 9 7
Keel		1 6 4	1 3 0	1 0 4	0 11 1	0 11 1	1 0 2	1 2 5	1 6 0	1 9 5
...Side		1 2 6	2 0 2	2 2 7	3 0 5	3 2 6	3 2 2	2 11 3	2 6 5	2 0 5
		0 11 4	1 8 5	2 5 6	2 2 6	3 0 0	2 11 6	2 5 2	2 4 6	1 10 5
...Line		0 1 4	0 2 1	0 3 6	0 5 6	0 4 6	0 3 5	0 3 1	0 2 4	0 2 1
Keel		0 0 4	0 1 2	0 2 5	0 3 6	0 4 0	0 3 5	0 3 1	0 2 4	0 2 1

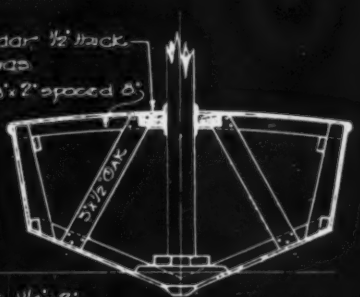
...Measurements in feet inches and eighths are to outside of Planking
...Stations spaced 24" apart

...aming — Main frames spaced 24" apart
...ce piece to be sized 2¼, molded 2" at deck
...ea 3" at chine. Bottom piece to be 7/8" x 1¾"
...ing bottom pieces to be put in half-way bet...
...ain frames. Two tapered frames to be put in ...
...ween main frames, size, ½" x 1" oak.
7/8" x 3" Oak floors on every bottom frame



...edar to finish ½"

Section at Station No 10.

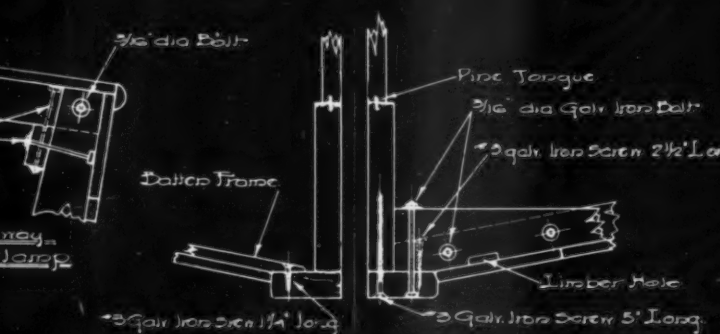


Chine Oak, 1¼" x 2"

Keel, 1¼" White Oak, 8" wide Amidships

Bracing Beams to be on Main frames Nos 2 & 4

Section at Station No 4.


3/16" dia Bolt
Pine Tongue
3/16" dia Galv. Iron Bolt
3 galv. Iron Screw 2½" Long
Batten Frame
Limber Hole
3 Galv. Iron Screw 1¼" long
3 Galv. Iron Screw 5" Long

...ay...
...Long

Sections in Way of Centerboard Trunk.

MOTOR BOATING
119 WEST 40th STREET
NEW YORK CITY

Scale ½" = 1'

...NG'S BUILD A BOAT Series

...NCES - An 18' Catboat

...Plans Designs by Chas. D. Mower.

General Specifications

Keel: White oak, in one length, about 16 feet 6 inches long, 1¼ inches thick and 8 inches wide amidships. To be tapered fore and aft as per offsets given in offset table for half breadths of rabbet line. Centerboard slot to be 5 feet 6 inches long and 1¼ inches wide, located as shown on inboard elevation. Edge of keel to be bevelled to make a square seam for the edge of the garboard plank.

Stem: Oak or hackmatack knee, 2½ inches thick and sawn to receive the ends of planking. To be fastened to forward end of keel with three ¼-inch galvanized iron bolts set up with nut and washer on inside. White pine stopwater to be fitted in rabbet line to prevent water following seam into boat. Face of stem to be made fair with planking except at upper end where face shall be left 1¼ inches wide to take brass plate for headstay.

Stern: Oak, 1¼ inches thick, shaped as per plans. To be fastened to end of keel with an oak knee shaped as shown on plans, 1¼ inches thick, bolted with ¼-inch galvanized screw bolts. Oak knees also fitted in deck framing over clamps as shown. Special care and attention must be given to fitting and fastening the stern to provide for use of an outboard motor.

Center Board Trunk: Headledges at each end of trunk to be oak 2 inches wide and 1¼ inches thick, lower ends to extend through keel, very tightly fitted and set in white lead. The bed logs are to be of 1¼-inch white pine, 8 inches wide amidships and very carefully fitted to inside of keel. Bed logs are about 8 feet 6 inches long, extending from aft end of trunk to cross floor located at design station No. 4. Upper edge of bed logs to be fitted with ¼-inch white pine tongue as shown to make tight joint with trunk siding. Bed logs are fastened to keel with brass or galvanized iron screws 5 inches long spaced 8 inches apart, carefully bored for and heads countersunk flush with bottom of keel. Bed logs to be set in white lead, evenly spread, to make an absolutely tight joint so that no caulking will be necessary. Neat oak or mahogany cap fitted on top of trunk to make a finish.

Center Board: Oak, ⅞ inches thick, shaped as shown on plans. To be made of four planks 9 inches wide with square edges, dowelled together with ¼-inch galvanized iron rod. Lower and aft edges to be neatly rounded. To be hung on a ½-inch galvanized iron bolt through the bed logs with a washer and gasket on each end to make a watertight joint. To have an eyebolt in upper edge at aft end for a rope pennant or a galvanized centerboard rod, similar to Durkee fig. 488, 20 inches long may be used. Hole with pin to be fitted to hold centerboard when pulled up. Centerboard to be weighted to overcome flotation with a block of lead about 6 by 6 inches cast into lower aft end of board and fitted flush.

Frames: All frames to be clear white oak. Main frames are to be spaced 24 inches apart and located on the design stations as given in table of offsets. The side frames are to be ¾ inches thick and moulded 1¾ inches. Bottom and side frames are to be fastened at chine with a 3/16-inch brass or galvanized iron bolt with washer under both head and nut, as shown by detail on plan. Heels of bottom frames to be fitted with an oak floor ⅞ by 3 inches as shown on plans bolted to frame with 3/16-inch screw bolts and fitted with one 3/16-inch screw bolt through keel as shown on detail section. Heel of frame to be fastened to keel with a 2½-inch wood screw, as per detail. Limber hole, about 1½ by ⅜ inches to be cut through frame and floor as shown to allow water to flow to deepest point of bilge. Extra frames, same as main bottom frames, to be fitted half way between the main frames and fitted with a floor same as main frames. An extra batten frame of oak ½ by 1 inch is to be fitted between the heavy frames so that the spacing of frames will be 6 inches center when all frames are in place.

Chines: Oak, 1¼ by 2 inches, in single length each side from stem to stern. To be notched into the main frames and fastened with one ⅜-inch screw bolt through the lower end of the side frames as shown on detail. Outside face of chine to be fair with face of side frame and bottom edge to be bevelled to be fair with bottom frames.

Clamps: Yellow pine, or spruce, in single lengths each side 1 by 2 inches. To be bolted to side frames at proper height to allow for ½-inch deck and 2-inch deck beams below heights of deck at side as given in table of offsets.

Mast Step: Oak, 2 feet 9 inches long and 1½ inches thick thoroughly fastened to top of bed logs and heel of stem also to the two cross floors shown on plan. Mortice for heel or mast should be cut 5 inches long by 2 inches wide and wedges fitted on forward and aft sides of heel of mast to give proper adjustment of rake.

Planking: White cedar, carefully selected and clear of all large or loose knots, sap, shakes or other imperfections. To be ½ inches thick. Side planks to be in single lengths, three planks to each side, and are to be put on before the bottom is planked. Bottomplanks to be worked in as long lengths as possible and in narrow stakes with butt well shifted. All planks should run out forward to the stem rabbet and not run to shim edges along chine. All butts to be made on oak block ⅝ inches thick fitted between frames. Planking to be fastened to heavy frames, stem and stern with brass screws 1½ inches No. 10. Fastenings in batten frames to be copper nails riveted over burrs. All heads of fastenings to be counter sunk and filled wih white lead putty. Seams to be caulked with cotton, payed with thick paint, and filled with white lead putty. Planking to be carefully planed smooth and sandpapered so that no plane marks show.

Deck beams: Deck beams to be oak, ⅞ by 2 inches, sawn to crown of three inches in six feet. Short beams alongside of cockpit to be of spruce ,same as main beams. To be spaced about 8 inches center to center as shown on deck beam plan. All beams to have one ⅜-inch diameter bolt through clamp as shown on detail and when possible a 3/16-inch bolt through head of frame. Mast partner to be oak, ⅞ inches thick and 12 inches wide as shown on plans. Fore and aft carline each side of cockpit to be oak ⅞ by 2 inches. Diagonal braces of oak ½ by 3 inches to be placed on main frame at station No. 4 as shown on construction plan; ends to be fastened with through bolts.

Deck: White pine or cedar, ½ inches thick, laid in narrow planks with tongue and groove edges. Fastened with galvanized wire nails, counter sunk to allow planing deck smooth before canvas is laid. Deck to be covered with 8 oz. canvas in one piece, thoroughly stretched and fastened with copper tacks. To be laid in thick white lead paint.

Cockpit: Cockpit coaming to be ⅜ inches quarter sawn oak, steamed and bent to shape as shown on plan. Fastened in place with brass screws, counter sunk and covered with putty colored to match coaming when varnished. Cockpit seats at aft end of centerboard trunk and at stern as shown on plans, to be of ⅞-inch pine or cedar. Cockpit floor to be white pine or cedar slats ½ by 3 inches, laid with ¼-inch space between. Two pieces on either side of centerboard trunk to be made removable to give access to bilge for bailing out. Center section aft of trunk also made removable.

Rudder: Rudder blade to be oak, ⅞ inches thick, shaped as per plans. To be made of two pieces dowelled together with galvanized iron rods. Forward edge to be rounded and aft edge tapered as thin as possible. Head fitted with cheek pieces forming mortice to receive tiller 1 3/8 by 2 inches. Rudder to be hung with ⅝-inch diameter galvanized rod through two rudder gudgeons in stern and two in rudder placed above and below the ones in the stern. Gudgeons to be similar to fig. 476-W Durkee catalog, ⅝ inches in diameter. Tiller to be of oak, shaped as per plan, 1 3/8 by 2 inches at rudder head and neatly tapered to 1-inch diameter round section with ball on end as shown. Removable pin through rudder head to hold in place.

Painting: Hull to be given a priming coat inside and out. Bottom to have three coats of green anti-fouling marine paint, each coat sandpapered before the next is applied. Topsides to have three coats of yacht white. Deck to have two coats of deck paint of color approved by owner. Inside of hull to be painted light buff color except the bottom boards which shall be light lead color. Cockpit coaming, sheer mouldings and tiller to be given four coats of best spar varnish.

Hull Fittings: Stem band to be a brass plate 3/16 inches thick and 1¼ inches wide at upper end tapered to ½-inch with corners rounded off to form stem band. To be fastened with brass screws, countersunk. Head drilled ¼-inch hole to take bolt of headstay turnbuckle. Chain plates for side stays to be brass, 1½ by 3/16 by 9 inches bolted to outside of planking with screw bolts through a backing piece of oak on inside of planking. Heads drilled ¼-inch hole to take bolt of turnbuckle. Halyard deck leader similar to Durkee fig. 36, No. 1 size to be bolted to deck on starboard side of mast. Halyard cleat similar to Durkee fig. 417, 5½-inch size bolted to deck just forward of cockpit for main halyard. Mooring cleat similar to Durkee fig. 417, 7-inch size bolted to deck through mast partner piece forward of mast. Mainsheet cleat similar to Durkee fig. 417, 5½-inch size bolted to seat at aft end of centerboard trunk. Bow chock similiar to

(Continued on page 60)

DUE perhaps to the many successful motor boat designs which have appeared in MoToR BoatinG during the past several years, numerous requests have been received for designs of sailing craft suitable for use on the sheltered waters of sounds and lakes. The design prepared for you by Chas. D. Mower in this issue is the first of several which will appear at intervals and is particularly adapted to class racing. Boats of a similar type furnish exciting sport and keen competition to many young men in all sections of the country today and we know many boats will be built from these plans—*Editor

SMALL MOTOR BOATS

Their Care, Construction, and Equipment

A Monthly Prize Contest Conducted by Motor Boatmen

Questions Submitted for the February Prize Contests

1. Describe any attachment or improvement to the engine which can be made and put on while the boat is laid up for winter.

(Submitted by H. H. P., Oakland, Calif.)

2. Describe spring equipped Pullman upper berth to fold down in day time to make a seat back, to be easily constructed by the amateur.

(Submitted by L. D. B., Los Angeles, Calif.)

ANSWERS to the above questions for the February issue, addressed to the editor of MoToR BoatinG, 119 West 40th St., New York, must be (a) in our hands on or before December 26, (b) about 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses.

The name will be withheld and initials used.

QUESTIONS for the next contest must reach us on or before December 26. The Editor reserves the right to make such changes and suggestions in the accepted answers as he may deem necessary.

The prizes are: For each of the best answers to the questions above, any article or articles sold by an advertiser advertising in the current issue of MoToR BoatinG of which the advertised price does not exceed $25, or a credit of $25 on any article which sells for more than that amount. There are two prizes—one for each question—but a contestant need send in an answer to only one if he does not care to answer both.

For answers we print that do not win a prize we pay space rates.

For each of the questions selected for use in the following month's contest, any article or articles sold by an advertiser advertising in this issue of MoToR BoatinG of which the advertised price does not exceed $5, or a credit of $5 on any article which sells for more than that amount.

All details connected with the ordering or the prizes selected by the winners must be handled by us. The winners should be particular to specify from which advertisers they desire to have their prizes ordered.

What To Do During The Winter Layup

Preliminary Steps Which Can Be Taken Before the Boat Is Closed In Which Will Tend To Simplify the Springtime Overhauling

Answers to the Following Question Published in the October Issue

"Describe in detail all steps which should be taken in laying the motor boat up for the winter, with a schedule of operations which can profitably be performed before the covering is closed in."

Points to Watch in Laying-Up

(The Prize-Winning Answer)

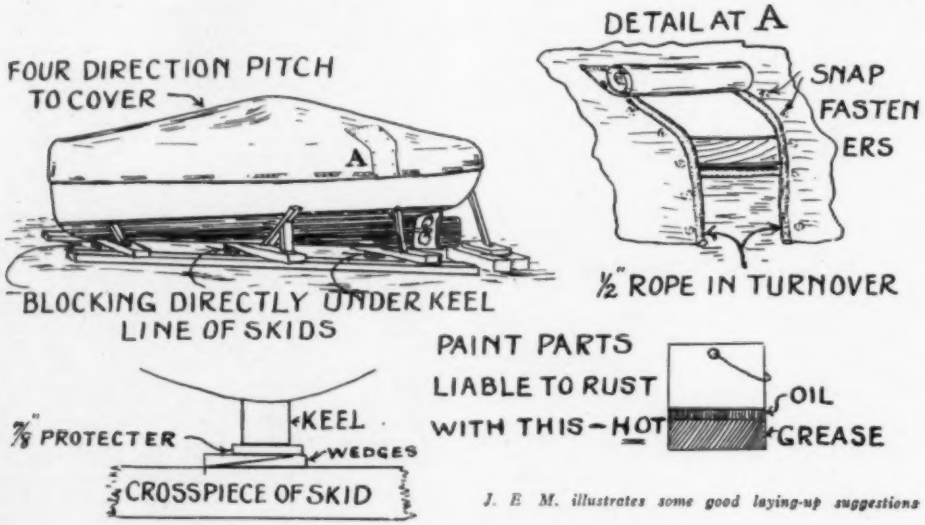
IF possible, lay up the boat where it will be sheltered from sweeping winds. While it is desirable to keep all the rain and snow off the cabin and out of the cockpit, it is well to retain the moisture that the summer immersion puts into the planking. Particularly is this true in the case of cypress planking. Hence, it is good practice to wash the underbody thoroughly when hauling out and to apply a coat of copper paint to the underbody.

This will not only retard the drying out process, but will make the job of refinishing much easier in the spring.

Water jackets should be drained and all water pipes cleared of any water that may rest in pockets. A little bilge water will do no harm, but the greater the deadrise, the greater the danger of the garboard from ice in the making, when its expansive powers are enormous. Many owners make sure that all bilge water is drained off as well as any other water such as, melted snow and ice, that makes its way into the hull, is taken care of by a half inch hole bored through the lowest point in the hull.

Lift the floor board and clean out the gurry and free the limber holes. Drain the gasoline tank. Clean the carbureter thoroughly and shellac the cork float.

All bright parts as well as moving parts should be painted with a mixture of cup grease and cylinder oil, four parts to one. The mixture should be applied hot. Cylinder heads should be removed and the cylinders stuffed with oil soaked waste. The toilet pumps should be disassembled and the cylinder, piston and leather valves painted with the forenamed mixture. Leave all cupboard doors open. Incidentally clean out all the duffle. Take the compass home. While it will stand a temperature of—10°F, see to it that it has a warm resting place. Change its position every



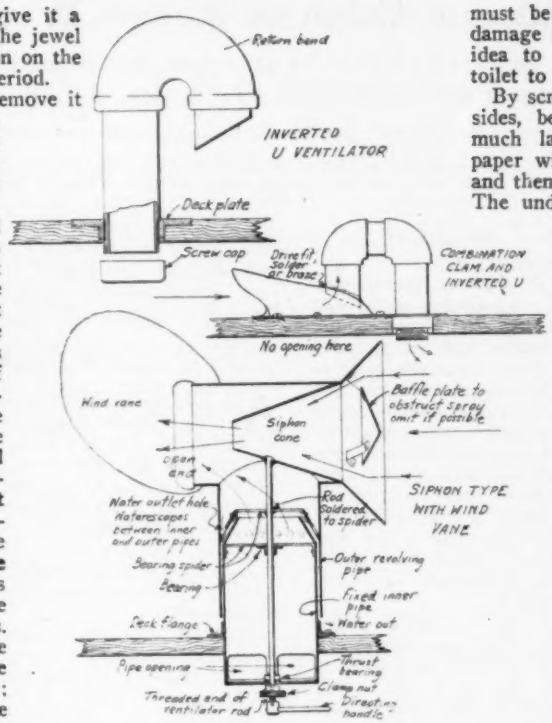
J. E. M. illustrates some good laying-up suggestions

three weeks at least, that is, give it a quarter or a half turn, so that the jewel will not rest in the same position on the pivot during the entire layup period.

If you have a chain cable, remove it from the boat and store in a dry place. If the galvanizing has worn off in places, cover these with red lead and paint with aluminum paint.

As regards the hull, it should rest approximately on land as it does in water. This can best be simulated by having the greatest part of the weight borne by the keel come at the fore and aft points. All boats will hog more or less, even if suspended wholly by the extreme ends, hence, any undue pressure along the line of the keel or bilge amidship will simply help along this condition. This does not mean that there should not be any supports amidship, but that the load carried there should be less than at the ends. This gradation of weight can best be taken care of with wedges.

Shores along the water line and the underbody will be necessary with larger hulls; common sense will tell where these should be placed. The overhang at the stern, will have a shore as shown in the illustration.



An effective siphon ventilating device designed by H. H. P.

Whatever the medium of covering, there should be provision for readily getting into the boat during the winter. Provision should likewise be made for the ventilation of the hull, by leaving a port partly open forward and a hatch slightly lifted astern.

Visit the boat periodically during the layup period. Turn over the motor so that the pistons and rings will not rest in the same place on the cylinder walls. The reason is obvious. Watch for the usual winter nuisances—torn covers, heaving ground, buckling skids and slipping blocking.

J. E. M., Norwich, Conn.

Much Can Be Done in the Fall to Ease Work in the Spring

LAYING up a boat does not mean just hauling out and covering for the winter. To the man who really cares for his boat it means leaving everything in the best possible condition to weather, the snow and ice outside, and the close damp air inside. He will also overhaul or remove much of the equipment so as to expedite fitting out.

An old adage, printed in the front of our school books said, "Don't put off until tomorrow what you can do today." There is a lot that you can do today, when the boat is hauled out, and save a lot of hard work and get a better job than you can do tomorrow, at fitting out time.

As soon as the boat is hauled out and blocked up, scrub off the outside; but first let's say a word about blocking. No less than three bearings, forward, aft, and amidship or under the engine, should be considered. Place long timbers crosswise under the boat so that the keel rests upon them, and block or shore up from these so that the keel is at least 18-inches from the ground. This method of blocking evens up the bearing and there is little danger of straining the hull or damaging the planking when the frost heaves the blocking.

As soon as the boat is solidly blocked up, run the motor slowly until all water has been drained from the jackets and piping. There is generally a plug at the lowest point in the water jacket. Continue running the motor until well warmed up to evaporate any remaining moisture.

In connection with this the fresh water tank and piping should be drained and washed. The toilet and basin pumps must be freed from water to prevent damage from freezing. It is not a bad idea to pump a light oil through the toilet to take the place of water.

By scrubbing down the decks and topsides, before covering for the winter much labor with scrapers and sandpaper will be saved. Use soap powder and then plenty of water to rinse it off. The underbody is not to be neglected, for the marine growth and slime is easily removed before it dries. If necessary fasten long handles to scrub brushes and let the whole crew take a little exercise now, to save much real work in the spring.

By the time such brass deck hardware and fittings as your friends might be apt to appropriate for their value as junk, have been removed and stored in the club house or packed to take home, it will be time to go home and read the Sunday paper.

When you get back at it again next week the hull will have dried sufficiently so that you can apply a light coat of paint to revive the old finish and protect it through the winter. Go over all exposed bright work with a thin coat of varnish. Only one coat for the deck and topsides but the underbody should be well sanded and given two full coats of composition. This is well worth while for it prevents the seams from drying open to any extent and leaves a good foundation for the Spring painting.

When you paint don't mix up any old thing to put on. Get a new can of the same brand as you used before and stick to this brand if it has proved satisfactory. Every brand of paint is of different composition and by applying several different brands, one over the other, all kinds of trouble may be experienced.

After the paint has dried you can put on the cover over a ridge pole and plenty of light rafters to prevent sag in the canvas. Ventilation under the covering is essential. Leave an opening fore and aft so that the air can circulate and don't close all the ports and the skylight. When properly covered the canvas will extend to the keel, when the two sides are tied together with a short string through grommets.

Now is the time to inspect and overhaul the motor and reverse gear and other equipment. You will have plenty of time to get any new parts required, have a worn shaft repaired, or babbit the stern bearing; and having plenty of time you will be apt to do a more thorough job than you would in the Spring. As the motor is assembled have all parts well oiled to prevent rust and take the carbureter and electrical equipment home where they will be dry and safe. Leave the motor uncovered as it will be sure to sweat and rust if covered.

Don't leave the storage battery aboard all winter. Now is the time to take it to the battery station for storage. The battery will then be properly taken care of and delivered in the spring fully charged. The cost will be about twenty-five cents a month plus the usual charging fee.

Leave the water in the bilge until it gets cold enough to freeze, and while waiting for cold weather scrape and scrub out the miscellaneous collection of strings, hair-pins, nuts and bolts, washers, and grease. A strong soap powder solution will loosen the grease now, while it is wet, much easier than in the spring. After scrubbing you will want to rinse the bilge with clean water. The longer water can be kept in the bilge without freezing the less the seams will dry open.

It is poor policy to leave bedding, mattresses, clothes, etc., which are apt to mildew, aboard the boat all winter.

Before the final fastening down of the cover open the ice box, all lockers, closets, and drawers and turn up the loose floor boards.

W. B. M., Newburgh, N. Y.

Ventilating a Cabin in Rough Weather

Original Devices to Force Air Into and Out of Small Boat Cabins In Order to Provide Ventilation At All Times

Answers to the Following Question Published in the October Issue

"Describe a Cabin Ventilator which will operate in stormy or rough weather when all doors and ports are closed, as well as when the boat is lying idle."

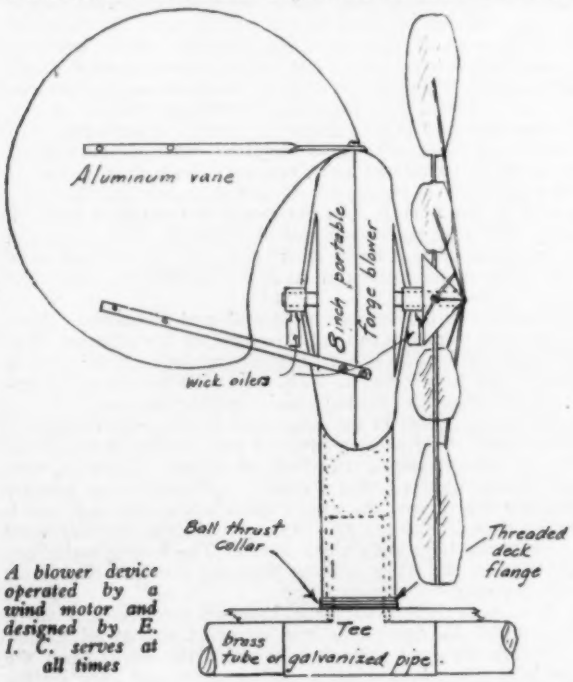
Force Draft Siphon Ventilator

(The Prize-Winning Answer)

A VENTILATOR suitable for all kinds of weather and attached to the cabin of a small boat is a difficult thing to devise, since it should be rugged and simple to withstand being stood upon, knocked against and the handling of anchor and mooring lines, especially with a sea on. There are stock varieties on the market but about the simplest and strongest ventilator can be made up by the boat owner from a brass deck plate, a brass or galvanized return bend, at least one and a half inch pipe size, and a straight pipe nipple. These fittings will form an inverted U and give some degree of ventilation to the cabin, yet even with a head sea there is little likelihood of water being forced through into the cabin. The pipe nipple can have a long thread and be screwed through the deck plate, so that a pipe cap may be screwed on inside should it be desired to close the opening.

A combination which allows of some air being forced into the cabin is made of a bronze stock type clam deck ventilator, pointing forward, and an inverted U similar to that described above, opening into the cabin. The deck end of the U is fitted into a hole bored in the after end of the clam fitting, where it is either soldered or brazed or made a forced or drive fit, the pipe end being shaped to fit the inside contour of the ventilator. A head wind will force air but no water through into the cabin and while at anchor the bow usually heads into the wind, so that the ventilator will still operate.

More elaborate design for a revolving vane type siphon ventilator is also suggested for the guidance of the boat owner who can work in sheet metal. This should be made of heavy galvanized iron, but used on a small boat there are the disadvantages mentioned above. The siphon cone prevents any great amount of water getting through and this escapes through a baffle cone in the revolving casing and down the narrow annular space between inner and outer casings. The rotating head can be clamped in any position from below by means of a clamp nut and handle as shown. A baffle plate attached to the mouth of the ventilator will keep out most of the water met head on, but its use should be avoided if possible.—H. H. P., Oakland, Calif.



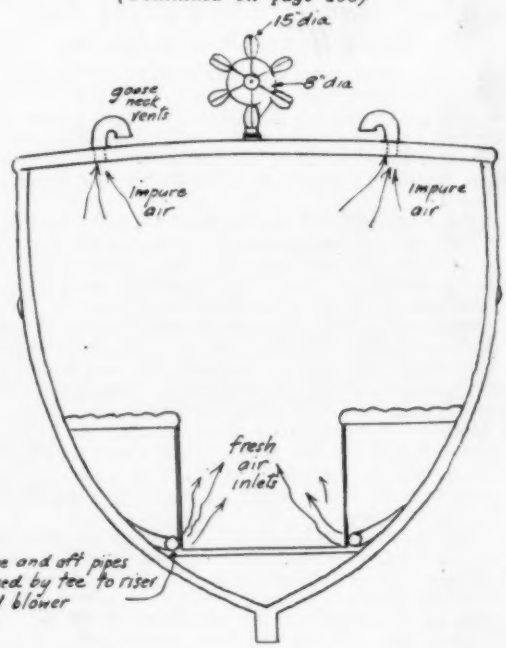
A blower device operated by a wind motor and designed by E. I. C. serves at all times

Ventilation By Means of a Blower

AIR will not force itself into the cabin of a small boat so as to perfectly ventilate it. You may sketch out a system of automatic ventilation in which the clean air comes in and replaces the foul air which goes out at the same time. This will look good on paper, just as treating the frames to prevent rot, will read nicely. Neither of these schemes ever works out in practice. You may ventilate a cabin which has large windows, as in a house boat, but when you come to the cabin with port lights, and a skylight, you cannot do it except perhaps when you have a headwind, and scoops on the ports.

The ventilator I have sketched out may be taken off and stowed in a locker in a few seconds. When you turn in for the night it supplies you with fresh air, when all the ports, etc., are closed. It is very inexpensive to make, the forge blower can be bought for less than five dollars and the wind motor can be made by any smart sixteen year old boy. The goose neck ventilators are a standard article and are rain proof. The wick oilers are standard for the old style electric fan. If you have a mind to oil the bearings once in a while you won't need them, but if you contemplate leaving the boat for a month at a time, you will. Before I put a ventilating fan on my boat I used to leave two ports partly open, and a good sized ventilator open in the forward deck when I left the boat for a long interval. When I got back my clothes were mouldy, the leather hat bands in the same condition, and a general damp, mouldy smell pervaded the entire cabin. Now I put a ventilating fan built as per sketch in place and leave everything, knowing that when I return, the cabin will be fit to live in with-

(Continued on page 108)



A. P. B. A. Holds Its Annual Meeting

Officers and Delegates Gather In New York to Consider the Business of the Association and Elect New Officers

THE twentieth annual meeting of the American Power-Boat Association, was held in New York, at the Waldorf Astoria Hotel, on October 26. The attendance of delegates was not as representative as it might have been, although all sections of the country were present. During the afternoon, the business of the meeting was conducted with dispatch by Commodore A. L. Judson who presided. Announcement was made of the chartering of the lower California section which is composed of the Los Angeles Yacht Club, which is consolidated with the Athletic Club there. This section promises to be one of the most active and strongest in the association. The membership of the clubs comprising this section is in the vicinity of eight thousand, and this by far exceeds the roster of any other section. The membership of the association now consists of 127 clubs.

The Standardization Committee of the Association has been working with the motor boat division of the S. A. E. in developing suitable standards for the interchangeability of marine hardware and other boat parts.

Among the activities of the Association is the custody of the various challenge cups, for which competition is held under Deeds of Gift. These trophies, nine in number, and the type of racing which they foster are:

1. The Carl G. Fisher trophy, for the displacement boat championship of North America;

2. The Class Cruiser Championship of America for cruisers not less than twenty-five nor more than forty-six foot waterline length;

3. The George Leary, Jr. trophy for hydroplanes, maximum piston displacement 1,100 cubic inches, three races fifty miles each;

4. International trophy, minimum length twenty feet and piston displacement not more than 2,250 cubic inches, three races twenty to forty nautical miles each;

5. Express Cruiser trophy for cruisers not less than thirty nor more than sixty feet waterline length, in one, two, or three heats, total distance not less than ninety nautical miles;

6. James Craig trophy for cruising type boats not less than thirty nor more than sixty feet, race to be 150 nautical miles;

(Continued on page 64)

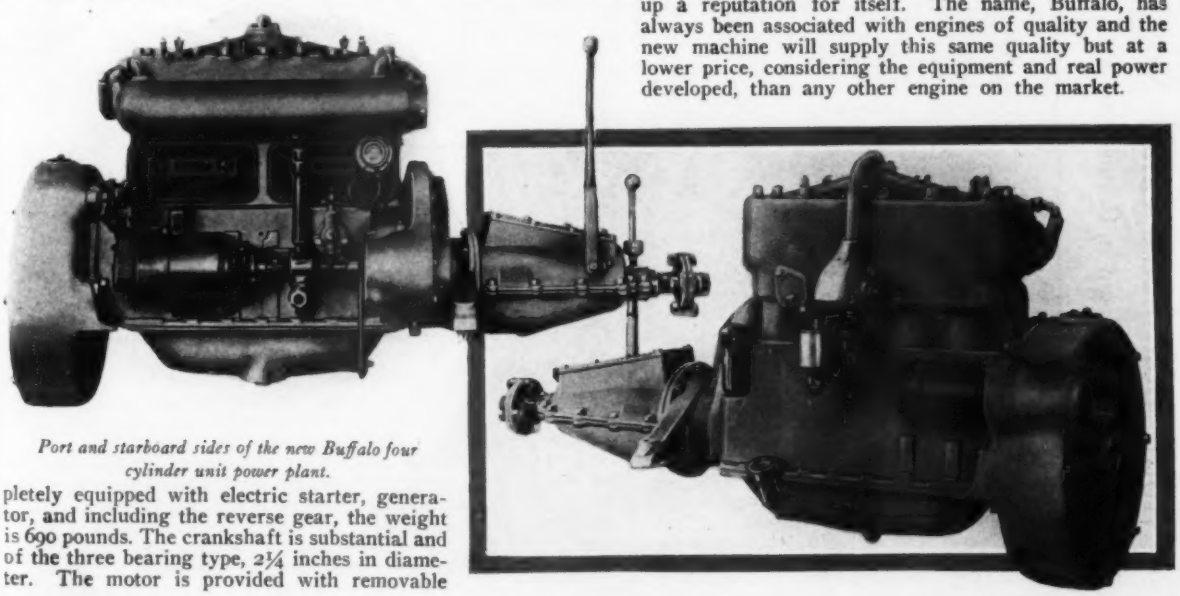
A Baby Buffalo Has Arrived

Addition of a New Model Light Weight Unit Power Plant Rounds Out the Comprehensive Line of Engines

FOR the particular benefit of the gas engine user whose appropriation for a motor plant has a limit, the Buffalo Gasoline Motor Company have developed a new unit. The demand for an engine suitable for a medium size cruiser and runabout is sufficiently strong to require an engine of this type, so that dealers can offer a purchaser an engine suitable for every possible condition. The prices governing the sale of the heavier units have been, in many cases, beyond the possibilities of the average purchaser and this new unit has been designed and produced to compete with most of the so-called cheap engines.

This machine is not a freakish light weight job, but a very substantially constructed, serviceable engine. It is light enough to be suitable to the average small boat and yet sufficiently heavy to be fitted for the cruiser. When completely equipped with electric starter, generator, and including the reverse gear, the weight is 690 pounds. The crankshaft is substantial and of the three bearing type, 2¼ inches in diameter. The motor is provided with removable cylinder heads and a complete unit reverse gear. Ignition is accomplished by means of a distributor driven from the generator of the electric starting system. The electric starting motor and generator are standard equipment, the storage battery being included in the outfit. An internal circulating lubricating system with a pressure gauge which may be mounted on a bulkhead or control panel provides efficient lubrication at all times. A gear driven pump forces the circulation water through all of the passages in the cylinder jackets and then around the exhaust manifold. From here the water passes around the intake manifold so as to heat the incoming mixture. Fresh hot air can also be supplied to the carbureter when desired.

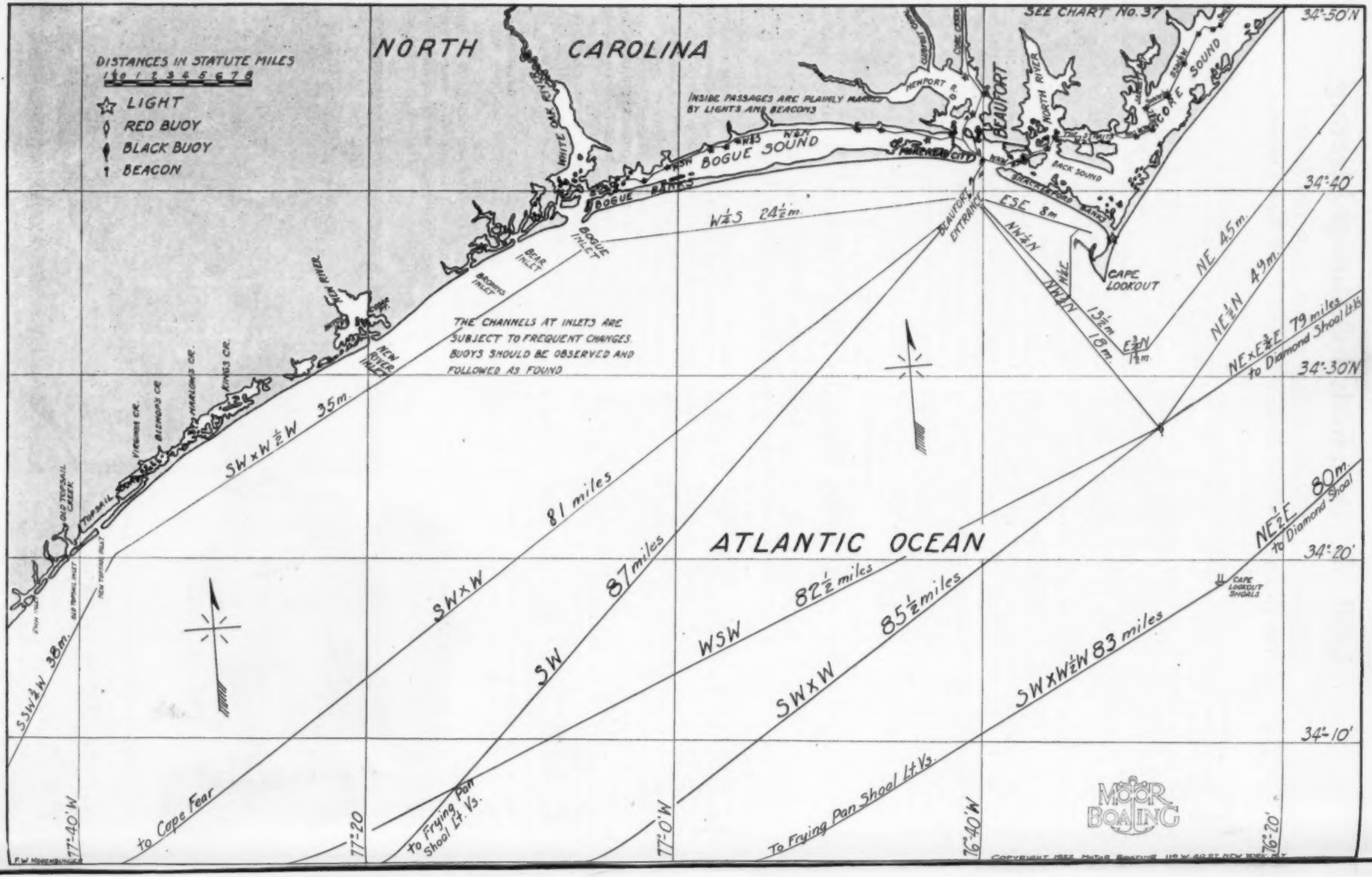
Because of its popular size this engine should meet with ready favor, and its own good qualities will rapidly build up a reputation for itself. The name, Buffalo, has always been associated with engines of quality and the new machine will supply this same quality but at a lower price, considering the equipment and real power developed, than any other engine on the market.



Port and starboard sides of the new Buffalo four cylinder unit power plant.

Motor Boatmen's Chart No. 38, North Carolina Coast-Core Sound to New River Inlet

To Be Used In Connection With Coast and Geodetic Survey Charts Nos. 148, 150, 420, 421, 422, 1233, 1234



Some Dead Reckoning Pointers

Remarks on Equipment, Precautions to be Observed, Compass Correction, Leeway and Current—The Tenth Lesson of a Correspondence Course Which Will Be a Complete Treatise On the Subject of Dead Reckoning

By Dean Potter

Chairman, Committee on Instruction, United States Power Squadrons, Inc.

THE shellbacks all say that "navigation cannot be learned out of books, but only by experience at sea." This is a half-truth. The theory and mathematics of navigation can be learned from books. It is as easy to solve a triangle ashore as afloat. But there is a practical side of the matter which, no doubt, cannot be perfectly acquired around a log fire. For instance, no book will tell us how much leeway the good ship Mary Jane will make close hauled and reefed on the starboard tack, in a forty-mile blow. And even the professor of nautical astronomy might be at a loss to say how much the Nancy Lee may overrun her log with a following sea and sheets lifted. The practical experience of the seadog is invaluable in estimating the data from which his dead reckoning is to be computed. He knows, as no landsman can know, the effect of tides and current, of wind and wave. And he knows his ship and her idiosyncrasies, not a small item in making an educated guess, as to the course and distance made good.

In the previous lessons, the endeavor has been made to explain the several dead reckoning methods, known as the sailings. It is now proposed to offer some suggestions as to the application of these methods in actual work, and as to incidental problems connected therewith. And yet it must ever be remembered that books teach theory, and that experience must be acquired in its application, before the student may become an accomplished navigator. But one thing is certain beyond controversy, namely: that he who goes to sea with a sound understanding of the theory of navigation, is nearer the goal than he who gets afloat without it. And it is nearly as certain that, in a pinch, his book learning will come in mighty handy and will probably suffice to give him a decent landfall, even if he doesn't hit the outer channel buoy plumb in the middle.

Preparing for the voyage: instruments, publications, equipment, etc.

Dead Reckoning is a branch of navigation. It is not used independently and alone, but in conjunction with other branches. A fix may be obtained by cross-bearings on shore objects, a method generally treated under the subject of piloting. But this fix may become the point of departure for the commencement of the dead reckoning. So, an astronomical observation may correct a dead reckoning position, and afford the fix for a new departure. All navigational methods interlock and complement each other.

Thus, the equipment required for dead reckoning differs but little from that employed in piloting or coastwise navigation. There should be a decent supply of charts, coast pilots, light and buoy lists, tide tables, and the like, dependent upon the voyage contemplated, together with the usual instruments for chart work, such as protractor, parallel rules, dividers, etc. And we must not forget our old friend, Bowditch. The equipment should include a supply of drawing paper, tracing paper, or cloth, rubber eraser, and hard pencils. The writer takes much stock in a semi-circular celluloid protractor, of about four inch radius and divided to degrees. It is not only handy as a drawing instrument in laying off or measuring angles, but makes a first rate course protractor. For instance, a rule or straight edge may be laid on the chart along the track to be made good, the protractor placed against it, and slid along until its center cuts a meridian, when the course angle may be at once read off. This does away with the necessity of setting an arm protractor, or of inchworming with parallel rules.

The standard compass should be in perfect order and its deviation card at hand. Of course, it must be remembered that deviation is not constant, but liable to change, particularly if the cargo contains much metal or other magnetic substance. An accurate compass, with known deviation, is absolutely indispensable to dependable dead reckoning, for the compass is the only instrument which gives direction sailed. With an erroneous compass, no accurate dead reckoning position can be deduced, nor can an accurately calculated course be made good. Thus, the deviation error should be ascertained and frequently checked.

The patent log should be oiled and in order. It is our most dependable instrument for determining distance made good through the water. Its errors, if any, should be ascertained by comparing its performance with the distance sailed over a measured course, as from one definitely charted object to another. How much better it is to set the log early, and check it by the run from an inner to an outer buoy, than to wait until one is about to lose the land, before giving it a thought! And it should be watched, not only at the beginning, but throughout the voyage, and should from time to time be hauled in, to see that the blades have not become bent or fouled.

In steam or motor vessels, the engine revolutions plus the time run, may be a dependable guide as to speed made good and distance covered; but only where care has been taken to ascertain the performance of the vessel, by trials over measured courses. And engine revolutions are apt not to be constant. Engines speed up and slow down and are sometimes stopped. They must be closely watched, and a careful record kept of their speeds and of the period covered by each different speed, if revolutions are to be used for dead reckoning purposes.

And either patent logs or engine revolutions are subject to the influences of sea and wind. Speed through the water may be diminished by a strong head wind and sea, with a consequent less distance made good. Likewise, a following wind or sea may materially increase speed and distance. A beam or quartering wind or sea may affect not only speed and distance made good, but direction as well, and pile up no small error in the course of a day's run. With a head wind and sea, the engine may be churning away furiously, with small progress to show for its labor. Under such conditions, the seas rushing past the vessel may cause the patent log to turn up a reckoning beyond what the ship actually does, to overlog, as the saying is. With a following sea, the ship may be aided through the water, and yet the seas may carry the log propeller toward the vessel, and cause slack in the log line, diminished revolutions, and underlogging in the result recorded.

These are matters we may warn against. But we can give no mathematical formula which will detect them or compute their effect. Experience, and especially experience with the particular vessel, under varying conditions, is about the only guide which will enable the mariner to make dependable allowances for errors of this kind.

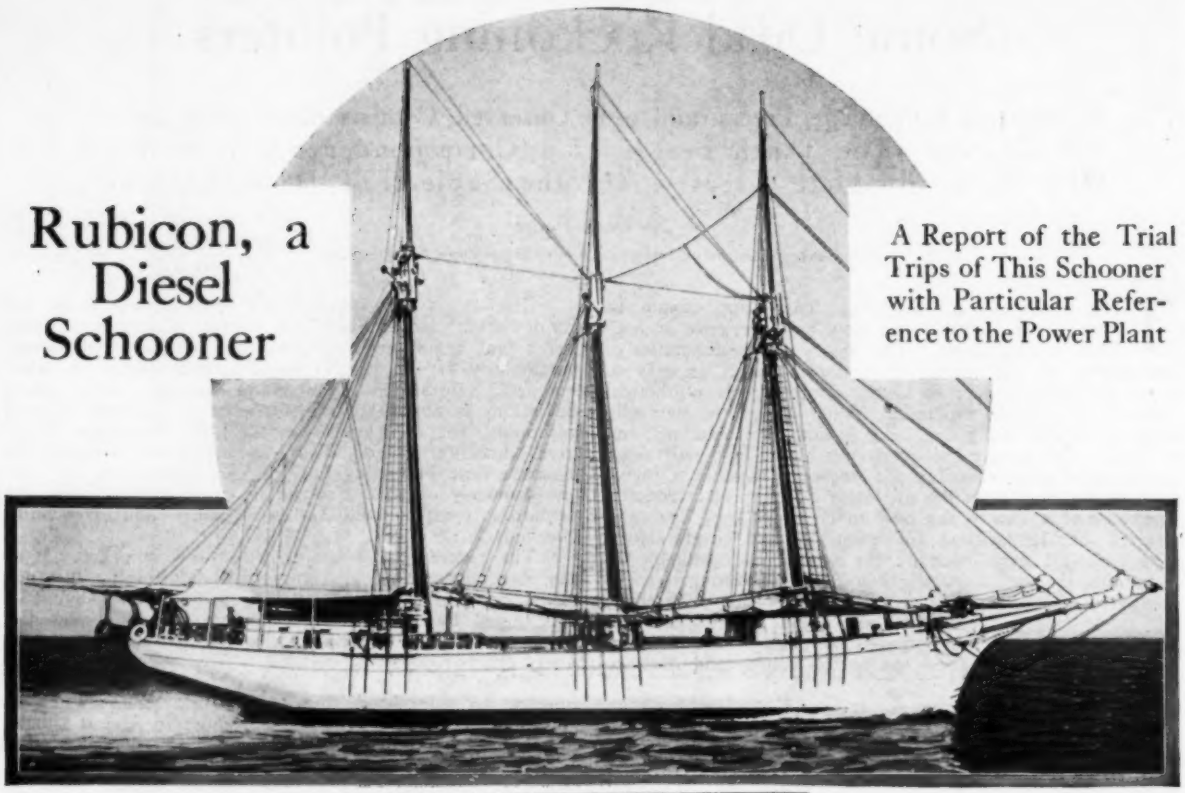
Taking departure:

In addition to what has already been said on this subject, we wish only to advise the timely taking of departure, when suitable objects are close aboard, and not when the land is about to sink under the horizon. First, near objects give the best fix; and secondly, if you wait too long, fog or mist may shut down, and you will find yourself outside with no fix at all for the commencement of your dead reckoning.

(Continued on Page 112)

Rubicon, a Diesel Schooner

A Report of the Trial Trips of This Schooner with Particular Reference to the Power Plant



ONE of the most complete bits of evidence that has been compiled in recent years concerning the full Diesel engines is contained in a letter written by John S. Parketon, a well-known inspecting engineer, in reference to a test witnessed by him, of a Midwest Diesel recently installed in the schooner Rubicon at Tampa, Fla., by the Midwest Engine Co., of Indianapolis.

Mr. Parketon addressed his letter to a shipbuilding company of Baltimore in answer to a number of inquiries made of him by its president. The engineer's letter is full of informative material and certainly will be of interest to the marine trade generally. We are permitted to quote as follows:

"I wrote you the 20th inst., stating at the time that I would take up the subject matter of your letter at a later date, owing to a trial trip I was about to make with one of the engines which we were discussing and I wished to make this trip before reporting. This engine was 120 h.p. full Diesel manufactured gy the Midwest Engine Co. of Indianapolis, and put in the schooner Rubicon to transform this schooner into an auxiliary.

"This trial was the most perfect success from an internal combustion motor standpoint that it has been my pleasure to witness. The total absence of vibration and smooth handling of this engine, either full load, part load or idle, and no smoke from incomplete combustion, made this quite unusual from the motor engine standpoint."

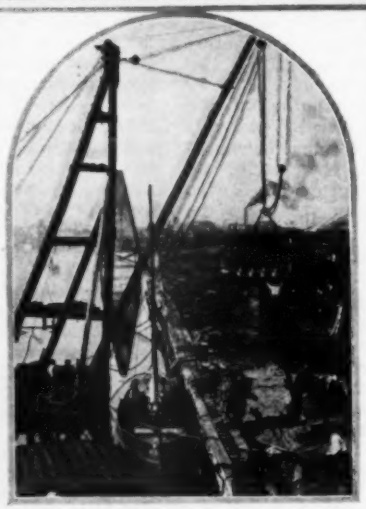
Mr. Parketon then proceeds to answer serially a number of questions asked him. Taking up first the questions about the full Diesel. Mr. Parketon says:

"The oil characteristics suitable to the full Diesel may be taken from the guarantee of the builders of this type of engine with perfect confidence as follows:

> "'They are guaranteed to burn crude oil, fuel oil, or petroleum residue from 16° to 40° Baume containing approximately 18,500 B.T.U. per pound, with a flash point between 100° and 250° F. burning between 250° and 300° F., free from solid and non-combustible matter and not more than .01% ash, .05% water, 1.05% sulphur or 10% of residue at 300° C. This admits practically all the commercial crude oils' ".

"Another question touches one of the heavy items of cost of operation of any internal combustion motor. In the full Diesel under discussion the lubrication per 100 h.p. per twelve-hour day is 1½ gallons. This does not sound reasonable, does it? However, such is the fact. As a matter of fact, lubricating oils are not worn out in actual practice. They are wasted in various ways, and in the full Diesel, particularly of the type which I had the pleasure of watching the work of at sea recently, there is a minimum of destruction of lubricating oil, either from wasteful evaporation, burning, accumulation of carbon deposit or other matter foreign to the oil. The oil volume in circulation being rather large, gives ample time for the oil to be re-cooled and the viscosity thereby brought back to normal. The oil pouring in a stream over the working parts in such volume as each individual point requires under a controllable pressure around 10 pounds.

"Referring to the carbonization, I may state that the temperatures are high enough to perfectly complete combustion without leaving any perceptible trace of carbon."



Schooner Rubicon equipped with a 120 h.p. Midwest Diesel engine. Motor being transshipped from railroad to lighter preparatory to installation in engine room of the vessel

American Marine Motors for 1923

An Alphabetical Index of Manufacturers of Standardized Marine Motors with the Range of Powers Produced by Each Which Will Be Ready for Installation During the Year

Allison Engineering Co., Indianapolis, Ind.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
425	5½x 7½	12	4	1500	4400

American Engine Co., Detroit, Mich.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
2½	3¼ x 3½	1	2	800	125
4	3⅜ x 3½	1	2	800	150
6	4¾ x 4½	1	2	800	200
8	5¼ x 5	1	2	500	335
8	3¾ x 3½	2	2	800	280
14	4¾ x 4½	2	2	750	350
20	5¼ x 5	2	2	600	495
14	3½ x 4	4	4	1000	650

Auto Engine Works, Inc., St. Paul, Minn.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
34	4¼ x 5½	4	4	1000	675
65	4¾ x 5½	4	4	2000	675

The Barker Factory, Norwalk, Conn.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
1¾	3 5/16 x 3½	1	2	550	110
2½	4⅛ x 4¼	1	2	500	170
4	4 9/16 x 5	1	2	450	220
6½	5½ x 6½	1	2	400	350
8	4 9/16 x 5	2	2	450	380

Belle Isle Boat & Engine Co., Detroit, Mich.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
4	3¼ x 4½	1	4	750	125

Brennan Motor Mfg. Co., Syracuse, N. Y.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
20	4 x 5	4	4	1000	625
35	4½ x 5	4	4	800	750
40	4½ x 5	6	4	1200	700
60	4 x 5½	6	4	1200	1000
100	4 x 6½	6	4	1500	1200

Buffalo Gasolene Motor Co., Buffalo, N. Y.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
4	3 x 4	2	4	700	240
6	3½ x 5	4	4	600	400
30	3½ x 5	4	4	1600	690
20	3¾ x 5	4	4	800	710
30	4¼ x 5	4	4	800	929
60	5½ x 7	4	4	900	1730
80	6¾ x 9	4	4	800	2800
12	5 x 6½	2	4	400	1170
15	6 x 7½	2	4	350	1400
22	7 x 9	2	4	350	2100
24	5 x 6½	4	4	400	1960
30	6 x 7½	4	4	350	2525
45	7 x 9	4	4	350	3655
50	7½ x 9	4	4	350	3800
70	7 x 9	6	4	350	4850
80	7½ x 9	6	4	350	5100
100	10 x 12	4	4	300	8200
150	10 x 12	6	4	300	12,800

C. N. Cady Co., Canastota, N. Y.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
1½	3 x 2½	1	2	1000	45
3	3⅜ x 3¾	1	2	700	90
6	3⅜ x 3¾	2	2	700	140
4	4½ x 4	1	2	700	135
8	4½ x 4	2	2	700	205
16	3¾ x 4	4	4	1000	300

Caille Perfection Motor Co., Detroit, Mich.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
2¼	3¼ x 3½	1	2	800	125
4	3⅜ x 3½	1	2	800	150
6	4¾ x 4½	1	2	800	200
8	5¼ x 5	1	2	500	335
8	3⅜ x 3½	2	2	800	280
14	4¾ x 4½	2	2	750	350
20	5¼ x 5	2	2	600	495
14	3½ x 4	4	4	1000	680

The Carlyle Johnson Machine Co., Manchester, Conn.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
5	3 x 3	2	2	1200	120

Consolidated Shipbuilding Corp., Morris Heights, New York

Model	Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R.P.M.	Weight
K	28	4 x 4½	4	4	1200	560
Z	44	4½ x 5½	4	4	1200	950
N	66	4½ x 5½	6	4	1200	1200
M	180	5¾ x 7	6	4	1200	2000
M	200	5¾ x 7	8	4	1200	2350
R	300	7 x 8½	6	4	1300	4000
M	75	5¾ x 7	4	4	1000	1850
M	130	5¾ x 7	6	4	1000	2400
M	175	5¾ x 7	8	4	1000	2900
L	115	6¾ x 8½	6	4	600	5000
H	165	8½ x 10	6	4	550	5900
H	250	11 x 12	6	4	450	11400

Evinrude Motor Co., Milwaukee, Wis.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
5	2⅜ x 2½	2	2	1200	67
2	2⅜ x 2½	1	2	800	45

Fay & Bowen Engine Co., Geneva, N. Y.

Model	Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R.P.M.	Weight
LN-40	12	2 13/16 x 4	4	4	1400	375
LN-41	23	3½ x 4½	4	4	1400	510
LN-42	40	4¼ x 5½	4	4	1400	900
LN-43	40	4¾ x 5½	4	4	1000	950
L-44	45	5 x 6¼	4	4	1000	1095
L-64	85	5 x 6¼	6	4	1200	1500

The Friable Motor Co., Middletown, Conn.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
5	4¾ x 5	1	4	600	400
7	6 x 6	1	4	550	560
10	4¾ x 5	2	4	600	525
16	6 x 6	2	4	600	825
18	4¾ x5	3	4	650	725
25	6 x 6	3	4	600	1175
30	4¾ x 5	4	4	800	925
40	6 x 6	4	4	600	1400
50	4¾ x 5	6	4	900	1100
75	6 x 6	6	4	750	2000
T 20	6 x 6	2	4	600	1300
T 50	6 x 6	4	4	600	2150
T 100	6 x 6	4	4	1200	2000

Gray Motor Corp., Detroit, Michigan

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
3	3½ x 3½	1	2	900	129
5½	4¼ x 4¼	1	2	900	185
6	3½ x 3½	2	2	900	240
25	3½ x 5	4	4	1200	550
35	4 x 6	4	4	1200	850

Hall-Scott Motor Car Co. Inc., Buffalo, N. Y.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
125	5 x 7	4	4	1700	1100
200	5 x 7	6	4	1700	1300

Kermath Manufacturing Co., Detroit, Mich.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
3	3¼ x 4	1	4	800	175
5	3½ x 4	2	4	800	200
8	3¾ x 4	2	4	800	215
12	3½ x 4	4	4	1000	470
18	3¾ x 4	4	4	1000	500
25	4 x 4	4	4	1000	525
35	4⅛ x 5½	4	4	1000	900
40	4½ x 6¼	4	4	1000	1400
55	4¾ x 5½	4	4	1600	650

Lockwood-Ash Motor Co., Jackson, Michigan

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
2½	3¼ x 3½	1	2	850	110
4	4 x 4	1	2	850	135
6	3½ x 3½	2	2	900	160
8	4 x 4	2	2	900	210
5	3¾ x 4	1	4	1000	160

The New London Ship & Engine Co., Groton, Conn. Diesel Engines

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
120	9 x 12½	4	4	350	17800
180	9 x 12½	6	4	350	23000
240	9 x 12½	8	4	350	30700
240	13 x 18	4	4	240	49800
360	13 x 18	6	4	240	64000
480	13 x 18	8	4	240	84300
600	16½ x 24	6	4	205	120000

New York Yacht, Launch & Engine Co., Morris Heights, N. Y.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
20	6½ x 8½	2	4	400	2000
50	6½ x 8½	4	4	500	3400
75	6½ x 8½	6	4	500	4500

Niagara Motors Corp., Dunkirk, N. Y.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
15	2⅜ x 4	4	4	1000	325
12	4⅜ x 5½	2	4	800	625
35	4¾ x 5½	4	4	1000	995
80	6¼ x 7	4	4	1000	1650
120	6¾ x 7	6	4	1000	2350
160	6¼ x 7	8	4	1000	3250

Packard Motor Car Co., Detroit, Mich.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
45	3⅜ x 5¼	6	4	1800	650
185	5 x 5¼	6	4	2000	900
375	5 x 5¼	12	4	2000	1150

Palmer Brothers, Engines, Inc., Cos Cob, Conn.

Model	Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R.P.M.	Weight
YT	2	3 x 3½	1	4	1000	98
NL1	3½	4½ x 4½	1	4	600	350
NL2	7	4½ x 4½	2	4	600	350
RW1	6½	5⅜ x 6	1	4	600	425
NR1	6	5 x 6	1	4	600	400
NR2	12	5 x 6	2	4	600	750
NR3	18	5 x 6	3	4	600	1000
NR4	24	5 x 6	4	4	600	1250
F2	18	6⅛ x 8	2	4	400	1600
F3	26	6⅜ x 8	3	4	400	2000
F4	35	6⅜ x 8	4	4	400	2400
F6	60	6⅜ x 8	6	4	400	3800
NK2	25	7½ x 10	2	4	400	3000
NK3	35	7½ x 10	3	4	300	3500
NK4	50	7½ x 10	4	4	400	4200
NK6	80	7½ x 10	6	4	400	5600
C	4	4½ x 4½	1	2	450	240
D	6	5 x 6	1	2	450	350
Q1	2½	3¼ x 3½	1	2	700	125
Q2	5	3¾ x 3½	2	2	700	180
P1	4	4½ x 4½	1	2	650	210
TM	10	2¾ x 3¼	4	2	1500	260
VH	14	3 x 4½	4	2	1200	700

The Peerless Marine Motor Corp., Buffalo, N. Y.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
6	5 x 6	1	4	600	450
12	5 x 6	2	4	600	600
20	4 x 6	4	4	1000	750
35	5 x 6	4	4	1000	850
24	5¾ x 7	2	4	650	1200
50	5¾ x 7	4	4	650	1700
125	5 x 7	4	4	1650	800

Red Wing Motor Co., Red Wing, Minn.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
14	2¾ x 4	4	4	1400	264
20	3½ x 4½	4	4	1200	520
24	3¾ x 4¾	4	4	1200	530
36	4 1/16 x 5	4	4	1400	600
40	4½ x 5	4	4	1400	670

Regal Gasoline Engine Co., Coldwater, Michigan

Model	Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R.P.M.	Weight
Y	2	3¼ x 3½	1	4	800	130
FA	4	4 x 4½	1	4	800	290
UA	5	4½ x 5½	1	4	600	385
EA	7	5¼ x 6½	1	4	550	745
JA	9	6½ x 7	1	4	500	1265
FB	8	4 x 4½	2	4	800	540
UB	10	4½ x 5½	2	4	600	730
EB	14	5¼ x 6½	2	4	550	1040
JB	18	6½ x 7	2	4	500	1680
FC	16	4 x 4½	4	4	800	700
UC	20	4½ x 5½	4	4	700	1035
JD	27	6½ x 7	3	4	500	2500
EC	30	5¼ x 6½	4	4	600	1600
CB	32	4½ x 5½	4	4	1000	910
JC	36	6½ x 7	4	4	500	2800
SC	50	7½ x 9	4	4	450	4600
SH	100	7½ x 9	8	4	400	8500

Scripps Motor Co., Detroit, Michigan

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
25	3¾ x 5	4	4	1000	590
42	3¾ x 5	4	4	1600	590
12	4¼ x 6	2	4	700	525
18	4¼ x 6	2	4	1000	525
45	4½ x 6	4	4	1000	975
70	4½ x 6	4	4	1600	900
60	4½ x 6	6	4	950	1400
100	4½ x 6	6	4	1600	1290

Sperry Compound Diesel Newport News Shipbuilding & Drydock Co., Newport News, Va.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
20 to 200		3 compound	2 and 4		1,000 to 10,000

Standard Motor Construction Co., Jersey City, N. J.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
12	5 x 6½	2	4	450	850
18	6 x 8	2	4	400	1200
24	5 x 6½	4	4	450	1600
27	6 x 8	3	4	400	3200
37	6 x 8	4	4	400	2800
54	6 x 8	6	4	400	3200
60	6½ x 8	4	4	600	3300
75	8 x 10	4	4	400	5300
90	6½ x 8	6	4	600	4200
100	8 x 10	6	4	400	8000
150	8½ x 11	6	4	400	5800
220	10 x 11	6	4	--	6300
300	12 x 14	6	4	--	9500
500	12½ x 13	6	4	--	18000

Stearns Motor Manufacturing Co. Ludington, Mich.

Model	Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R.P.M.	Weight
MGU	40	4¼ x 6	4	4	1100	1000
MHU	50	4½ x 6	4	4	1100	1000
MHR	60	4½ x6	4	4	1600	950
MAU	50	4¾ x 6½	4	4	1000	1600
MDU	70	5⅛ x 6½	4	4	1050	1600
MDR	100	5⅛ x 6½	4	4	1600	1300
MEU	90	5½ x 6½	4	4	1100	16 00
MER	150	5½ x 6½	4	4	1850	1300

Sterling Engine Co., Buffalo, N. Y.

Model	Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R.P.M.	Weight
Neptune	15	5½ x 7	2	4	500	1150
Dolphin	160	5¾ x 6¾	4	4	1650	1600
Dolphin	234	5¾ x 6¾	6	4	1650	2000
Dolphin	316	5¾ x 6¾	8	4	1650	2750
Trident MS	98	5¾ x 6¾	4	4	1200	1700
Trident MS	145	5¾ x 6¾	6	4	1200	2300
Trident MS	195	5¾ x 6¾	8	4	1200	3150
Trident SS	63	5¾ x 6¾	4	4	800	1875
Trident SS	94	5¾ x 6¾	6	4	800	2550
Trident SS	126	5¾ x 6¾	8	4	800	3150
Dolphin Special	185	5¾ x 6¾	4	4	1950	1550
Dolphin Special	275	5¾ x 6¾	6	4	1950	1965
Dolphin Special	365	5¾ x 6¾	8	4	1950	2750
Seagull	150	4 11/16 x 6	6	4	1800	1375
Viking	300	7 x 8½	6	4	1200	4800

Universal Motor Co., Oshkosh, Wis.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
12	2⅜ x 4	4	4	1200	325

Joseph Van Blerck Engine Corp., New York, N. Y.

Model	Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R.P.M.	Weight
N-101-SS	24	5½ x 6	2	4	800	1000
N-102-SS	24	5½ x 6	2	4	800	1000
N-103-SS	57	5½ x 6	4	4	1000	1497
N-104-SS	57	5½ x 6	4	4	1000	1497
N-105-SS	86	5½ x 6	6	4	1000	1890
N-106-SS	86	5½ x 6	6	4	1000	1890
N-107-SS	95	5½ x 6	8	4	1000	2287
N-108-SS	95	5½ x 6	8	4	1000	2287
N-120-MS	78	5½ x 6	4	4	1500	1497

(Continued on Page 100)

How Fast Can a Runabout Go?

The Summary of American Power Boat Association Runabout Records for the Past Three Years Shows the Remarkable Advances Made in Speed and Endurance

Boat	Owner	Distance Miles	Length of One Lap	Kind of Course	Location	Date	Length of Boat	Piston Disp	Speed SMPH
Miss Nassau	C. B. Johnston	2	2	C	Miami	1920	28	1650	43.1
Miss Nassau	C. B. Johnston	1	1	S*	Detroit	1920	28	1650	49.25
We We	Webb Jay	2	2	C	Miami	1920	28	825	36.0
Miss Nassau	C. B. Johnston	10	2	C	"	1920	28	1650	38.1
N'Everthin'	W. Kemp	20	2	C	"	1920	28	825	35.1
Brush By	J. B. Sullivan	40	5	CS	Thousand Is.	1920	26	825	37.1
Brush By	J. B. Sullivan	60	5	CS	Buffalo	1920	26	825	36.6
Miss Nassau	C. B. Johnston	80	5	CS	"	1920	28	1650	46.0
Rainbow I	H. B. Greening	50	2½	C	Detroit	1920	32	1056	37.2
Rainbow I	H. B. Greening	150	2½	C	"	1920	32	1056	36.7
Sure Cure	P. Strasburg	1	1	S*	"	1920	32	1650	47.87
We We	Webb Jay	10	2	C	Miami	1920	28	825	26.4
Miss Nassau	C. B. Johnston	20	2	C	"	1920	28	825	29.8
Brush By	J. B. Sullivan	5	5	CS	Buffalo	1920	26	825	34.9
Miss Nassau	C. B. Johnston	30	5	CS	"	1920	28	1650	48.8
Brush By	J. B. Sullivan	20	5	CS	Thousand Is.	1920	26	825	38.1
Brush By	J. B. Sullivan	5	5	CS	"	1920	26	825	38.5
Orlo II	G. Leary, Jr.	1	1	S	Miami	1921	36	2112	47.0
Orlo II	G. Leary, Jr.	2	2	C	"	1921	36	2112	40.0
Orlo II	G. Leary, Jr.	50	2	C	"	1921	36	2112	38.8
Adieu	Webb Jay	150	2	C	"	1921	32	825	37.5
Orlo III	G. Leary, Jr.	1	1	S	Buffalo	1921	35	2852	57.79
Orlo III	G. Leary, Jr.	2	2	CS	"	1921	35	2852	41.36
Orlo III	G. Leary, Jr.	50	2	CS	"	1921	35	2852	39.8
Rainbow I	S. B. Eagan	150	2	CS	"	1921	32	1056	38.3
Adieu	Webb Jay	50	2	C	"	1921	32	825	38.4
Adieu	Webb Jay	2	2	C	Miami	1921	32	825	39.8
Adieu	Webb Jay	150	2	C	"	1921	32	825	37.5
Rainbow I	H. B. Greening	1	1	S*	"	1921	32	1056	41.8
Rainbow I	S. B. Eagan	1	1	S*	Buffalo	1921	32	1056	44.03
Nick Nack	H. Birge	10	5	C	Toronto	1921	32	825	40.2
Nick Nack	H. Birge	30	5	C	Miami	1921	32	825	38.4
Rainbow I	S. B. Eagan	50	2	CS	Buffalo	1921	26	825	36.6
Rainbow I	S. B. Eagan	2	2	CS	"	1921	32	1056	41.1
Baby Gar I	Gar Wood	150	2½	C	Detroit	1921	32	1650	42.6
Baby Gar I	Gar Wood	50	2½	C	"	1921	32	1650	44.2
Orlo III	G. Leary, Jr.	50	2½	C	"	1921	35	3300	42.6
Nick Nack	H. Birge	2½	2½	C	"	1921	32	825	42.15
Nick Nack	H. Birge	50	2½	C	"	1921	32	825	41.3
Nick Nack	H. Birge	150	2½	C	"	1921	32	825	40.6
Nick Nack	H. Birge	5	5	C	"	1921	32	825	42.86
Baby Gar II	Gar Wood	50	2½	C	"	1922	32	1650	48.95
Baby Gar II	Gar Wood	2½	2½	C	"	1922	32	1650	51.50
Wood Fish	Edsel Ford	2½	2½	C	"	1922	32	1650	53.0
Baby Gar II	Gar Wood	150	2½	C	"	1922	32	1650	45.6
Packard Baby Gar	Col. J. G. Vincent	50	2½	C	"	1922	32	1237	44.49
Packard Baby Gar	Col. J. G. Vincent	2½	2½	C	"	1922	32	1237	45.5
Baby Gar III	Gar Wood	50	2	CS	Hamilton	1922	32	2652	41.3
Baby Gar III	Gar Wood	150	2	CS	"	1922	32	2652	40.0
Baby Gar III	Gar Wood	2	2	CS	"	1922	32	2652	46.5
Packard Baby Gar	Col. J. G. Vincent	50	2	CS	"	1922	32	1237	40.4
Packard Baby Gar	Col. J. G. Vincent	2	2	CS	"	1922	32	1237	42.6
Wood Fish	Edsel Ford	30	5	CS	Buffalo	1922	32	1650	43.25
Wood Fish	Edsel Ford	5	5	CS	"	1922	32	1650	53.6
Baby Gar II	Gar Wood	30	5	CS	"	1922	32	1650	50.8
Baby Gar II	Gar Wood	5	5	CS	"	1922	26	1650	53.0
Baby Gar Jr.	Gar Wood	30	5	CS	"	1922	26	825	43.6
Baby Gar Jr.	Gar Wood	5	5	CS	"	1922	26	825	43.8
Packard Chriscraft	Col. J. G. Vincent	30	2½	C	Detroit	1922	26	619	40.6
Packard Chriscraft	Col. J. G. Vincent	2½	2½	C	"	1922	26	619	41.4
Arab VI	R. H. Sidway	30	2½	C	"	1922	26	624	40.5
Arab VI	R. H. Sidway	2½	2½	C	"	1922	26	624	41.0
Zephyr	P. Strasburg	30	2½	C	"	1922	26	550	38.15
Zephyr	P. Strasburg	2½	2½	C	"	1922	26	550	39.10
Packard Chriscraft	Col. J. G. Vincent	90	2½	C	"	1922	26	619	40.3
Arab VI	R. H. Sidway	90	2½	C	"	1922	26	624	39.1
Arab VI	R. H. Sidway	30	5	CS	Buffalo	1922	26	624	39.1
Arab VI	R. H. Sidway	5	5	CS	"	1922	26	624	41.9
Belle Isle Bear Cat	E. Gregory	30	5	CS	"	1922	26	550	35.5
Belle Isle Bear Cat	E. Gregory	5	5	CS	"	1922	26	550	36.6
Baby Gar III	Gar Wood	50	2½	C	Detroit	1922	32	2652	50.25
Baby Gar III	Gar Wood	2½	2½	C	"	1922	32	2652	51.75

NOTES:
S* Average of 6 one-mile dashes

C Circular or Elliptical course with wide turns
CS Single buoy turns with straightaway between

Standardization Produces Many Stock Boats

Ready Reference List of Stock Boat Builders Alphabetically Arranged According to their Trade Names with Addresses

Baby Gar.....Gar Wood Inc., 7924 Riopelle St., Detroit, Mich.
Balsa....American Balsa Co., Inc., 305 Vernon Ave., Long Island City, N. Y.
Beebee.....Sydney C. McLouth, Marine City, Mich.
Beetle.....Beetle Standardized Power Cruiser, New Bedford, Mass.
Belle Isle.....Belle Isle Boat & Engine Co., 9663 East Jefferson Ave., Detroit, Mich.
Brooks.....Brooks Manufacturing Co., 2423 Brooks St., Saginaw, Mich.
Brown.....E. H. Brown, 207 Bay St., Taunton, Mass.
Burger.....Burger Boat Co., Manitowoc, Wis.
Canadian Boat.....Canadian Boat & Engine Exchange, 43 Yonge St., Toronto, Ontario, Canada.
Consolidated....Consolidated Shipbuilding Corp., Morris Heights, N. Y.
Darrow.....Darrow Steel Boat Co., Albion, Mich.
Ditchburn....Ditchburn Boats, Ltd., Gravenhurst, Muskoka, Canada.
Elco.....The Elco Works, 201 Ave. A, Bayonne, N. J.
Everett.....Everett Hunter Boat Co., McHenry, Ill.
Evinrude....Evinrude Motor Co., 756 Evinrude Bldg., Milwaukee, Wis.
Fay & Bowen....Fay & Bowen Engine Co., 104 Lake St., Geneva, N. Y.
F. & S......Fellows & Stewart, Wilmington, Calif.
Gray.....Gray Boats, Thomaston, Maine.
Great Lakes.....Great Lakes Boat Building Corp., Milwaukee, Wis.
Greenport...The Greenport Basin & Construction Co., Greenport, N. Y.
Hacker.....Hacker Boat Co., 1525 Crane Ave., Detroit, Mich.
Haertel.....Walter W. Haertel, Sturgeon Bay, Wis.
Harrison.....R. W. Harrison Boat Works, Toledo, Ohio.
Hoffer..Hoffer Motor Boat Co., 1969 Georgia St., W., Vancouver, B. C.
Jacksonville.....Jacksonville Boat Co., 7025 Clyde Ave., Chicago, Ill.
Lyman.....Lyman Boat Works, 1535 East 43rd St., Cleveland, Ohio.
Liggett.....A. G. Liggett & Son, Co., Wyandotte, Mich.
Matthews.....The Matthews Boat Co., Port Clinton, Ohio.
New England.....New England Boat Works, Cos Cob, Conn.
New Jersey....New Jersey Motor Boat Co., 131-137 Front St., Keyport, New Jersey
Nevins.....Henry B. Nevins, Inc., City Island, N. Y.
Ramaley.....Ramaley Boat Co., Wayzata, Minn.
Red Bank.....Red Bank Yacht Works, Red Bank, N. J.
Richardson....Richardson Boat Co., 370 Sweeney St., N. Tonawanda, New York
Rochester.....Rochester Boat Works, Inc., Rochester, N. Y.
Sea Sleds.....Sea Sled Co. Ltd., West Mystic, Conn.
Toppan....Toppan Boat Mfg. Co., 125 Riverside Ave., Medford, Mass.
Washington.....Washington Knock Down Boat Co., Seattle. Wash.
Williams....The A. R. Williams Machinery Co. Ltd., Front St., West Toronto, Canada

Stock Boats for 1923

Listed According to their Length this Tabulation Includes Practically All Stock Boats on the American Market Today

Lgth. Feet	Trade Name	Type	Beam Feet	Draft Feet	H.P.	R P M	Prop. Ins.	Speed m p h
12	Canadian	Outboard	3-6	6	2	2100	.....	9
13	Lyman	Outboard	4-2	.....	.....	.....	.....	.....
14	Mullins	Outboard	4-	.....	.....	.....	.....	.....
15	Hoffar	Fishing	4	16	3-4	700	14x14	7
15	Lyman	Outboard	4-4	.....	.....	.....	.....	.....
15	Lyman	Outboard	4-6	.....	.....	.....	.....	.....
15-6	Evinrude	Outboard	3-10	.....	.....	.....	.....	.....
15	Bebee	Clinker	.....	.....	Out	Board	.....	.....
15	Brooks	V-Bottom	3-7	4	2½	700	9x12	7
15	Darrow	Open	4	12	2	900	10	7
16	Canadian	Launch	4-6	12	3	900	.....	8
16	Toppan	V-Bottom	.....	.....	12	.....	.....	15
16	Everett	Open	4-6	14	3	500	12	7
16	Evinrude	Round Bottom	4-3	5	.....	.....	.....	.....
16	Belle Isle	Round Bilge	5-6	14	5	850	12x14	8
16	Belle Isle	Round Bilge	4-0	9	2½	800	9x12	8
16	Mullins	Hydroplane	4-4	17	25	.....	16x22	28
16	Darrow	Open	4	15	2½	900	12	7
16	Beebee	Clinker	4	12	2	Mot o Ro		w
16	Brooks	V-Bottom	3-9	6	15	1400	14x26	24
17	Darrow	Open	4-2	15	2½-4	900	12	7-8
17	Mullins	V-Bottom	4-2	15	12	.....	12x15	14
17	Williams	Tunnel	4-4	6	2½	800	9	7-8
18	Toppan	Dory	5	3	3	750	12	7
18	Greenport	Yacht Tender	5	6	15	1200	14x18	16
18	New Jersey	V-Bottom	5	19	20	1500	16x18	25
18	New Jersey	Round Bottom	5	19	15	1000	16x18	14
18	Everett	Open	5	14	3	500	12	7
18	Beebee	Round Bottom	5-2	18	3	.....	.....	8
18	Brooks	V-Bottom	4-4	12	9	1200	14x18	11
18	Darrow	Open	4-4	15	6	900	12	8-9
19	Everett	Open	5	15	10	650	13	10-12
19	Darrow	Open	4-6	18	1-8	900	12	8-10
20	Brooks	Dory	5-1	16	12	1000	14x20	12
20	Darrow	Open	4-8	18	6-8	900	12	10
21	Toppan	V-Bottom	6	.....	20	.....	.....	20
21	Ditchburn	V-Bottom	5-6	.....	25	.....	.....	20
21	Ditchburn	Round Bottom	5-6	.....	30	.....	.....	35
21	Everett	Open	4-9	15	12	750	13	15
21	Mullins	V-Bottom	5-6	20	40	.....	16x23	20
22	Canadian	Runabout	5-4	18	12	1600	.....	14
22	Toppan	Dory	6	.....	12	950	14	9½
22	Toppan	Launch	6	.....	12	950	14	9½
22	Toppan	Cat Boat	9-6	.....	4	.....	.....	.....
22	Beetle	R. D. Cruiser	8-6	26	12	900	16x14	9
22	Ramaley	V-Bottom	6	18	60	2000	16x15	32
22	Belle Isle	V-Bottom	5-8	20	20	1200	15x20	17
22	Brooks	V-Bottom	4-8	18	22	1200	16x22	18
23	Hacker	Runabout	6	21	50	1500	16x22	23
23	Everett	Sedan	5	15	12	750	13	15
24	Fay & Bowen	Runabout	5	20	23	1400	.....	16
24	Belle Isle	V-Bottom	6-1	22	40	1500	16x20	20
25	Canadian	Runabout	5-4	18	15	1000	.....	15
25	Canadian	Cruiser	7	20	12	1200	.....	10
25	Consolidated	Runabout	5-8	22	28	1200	.....	16
25	Brooks	Round Bilge	6	22	16	1000	16x20	10
25	Sea Sled	Runabout	6	14	125	1650	.....	35
25	Fay & Bowen	V-Bottom	5-4	25	50	1400	.....	23
25	Everett	Sedan	5-6	16	20	800	14	18
25	Mullins	V-Bottom	6	22	75	.....	18x23	26
26	Red Bank	Lapstreak	6	20	.....	.....	.....	40
26	Richardson	Runabout	6-6	.....	125	1750	18x26	33
26	Richardson	Crusier	8-6	30	16	700	18x18	10
26	Toppan	Launch	7	.....	16	.....	.....	12
26	Jacksonville	Cruiser	8-6	30	20	800	.....	8-9
26	Ditchburn	V-Bottom	6	.....	40	.....	.....	22
26	Balsa	Tunnel Stern	6-6	12	12	600	20x24	8
26	Belle Isle	V-Bottom	7	25	200	1750	18x28	40
26	Belle Isle	V-Bottom	6-6	23	125	1750	18x24	35
26	Belle Isle	V-Bottom	6-6	22	75	1600	17x22	23
26	Burger	Runabout	6-4	22	40	1000	16x20	25
27	Fay & Bowen	Runabout	5-3	22	40	1400	.....	19
28	Canadian	Runabout	5-6	18	20	1000	.....	17
28	Gray	Raised Deck	8-8	32	25	1000	.....	10
28	Gray	Raised Deck	8-8	32	40	1000	.....	13
28	Greenport	Runabout	6-3	20	40	1200	20x20	20
28	Liggett	V-Bottom	8-6	28	20	930	18x16	10
29	Hoffar	Runabout	6	20	75	.....	.....	26
29	Hoffar	Runabout	6	20	100	.....	.....	30
30	Canadian	Cruiser	8	22	15	900	.....	12
30	Richardson	Cruiser	8-6	2-9	30	900	.....	14
30	Great Lakes	Runabout	7	30	300	1600	.....	40
30	Fay & Bowen	Runabout	5-6	23	50	1400	.....	21
30	Beetle	R. D. Cruiser	10-6	30	20	100	18x18	9
30	Elco	Express Cruiser	8	27	40	1200	.....	16
30	Elco	Runabout	6-2	22	40	1450	.....	20
30	Everett	Sedan	6	16	25	900	16	20
30	Brooks	V-Bottom	8-8	30	30	1000	20x18	11
31	Ditchburn	V-Bottom	6-6	.....	150	.....	.....	25
32	Canadian	Runabout	6-6	20	40	1000	.....	18
32	Consolidated	Runabout	6	28	66	1200	.....	22
32	Red Bank	Lapstreak	9	29	60	1400	22x18	15
32	Greenport	Auxiliary Sloop	8	48	8	600	18x18	7
32	Jacksonville	Cruiser	8-6	30	40	800	.....	12
33	Elco	Cruisette	8-8	34	40	900	.....	12
35	Canadian	Cruiser	9	24	20	900	.....	14
35	Jacksonville	Open Boat	8-6	28	150	1200	.....	26
35	Jacksonville	Sedan	8-6	28	150	1200	.....	26
35	Jacksonville	Express Cruiser	8-6	28	150	1200	.....	26
35	Ditchburn	Round Bottom	6-6	.....	275	.....	.....	38
35	Belle Isle	V-Bottom	7	25	200	1750	19x26	32
36	Densmore	Cruiser	9-6	30	50	1000	.....	16
36	Great Lakes	Raised Deck	9	36	50	1600	.....	14
36	Burger	Cruiser	9	36	32	800	22x18	11
36	Brooks	V-Bottom	9-10	34½	35	1000	22x18	12
36	Ditchburn	V-Bottom	7-6	.....	175	.....	.....	27
36	Luders	Cruiser	9	36	18	600	.....	10
40	Canadian	Cruiser	10	26	40	900	.....	16
40	Hoffer	Cruiser	9	32	100	.....	.....	15
40	Richardson	V-Bottom	9-6	36	35	800	22x44	12
40	Rochester	V-Bottom	9-6	30	.....	.....	.....	.....
40	Elco	Cruisette	9-9	36	40	900	.....	11
42	Great Lakes	Raised Deck	9	36	225	1600	.....	23
45	Rochester	V-Bottom	10-4	33	.....	.....	.....	.....
45	Greenport	Cruiser	8-11	34	50	700	28x26	13
45	Elco	Cruisette	11-3	36	40	900	.....	11
50	Rochester	V-Bottom	12	36	.....	.....	.....	.....
54	Great Lakes	Raised Deck	11	42	450	1600	.....	26
54	Matthews	House Boat	15-4	42	54	400	.....	10
55	Rochester	V-Bottom	12	36	.....	.....	.....	.....
55	Jacksonville	Cruiser	13-6	48	80	650	.....	12
56	Elco	Twin Screw	13	36	80	900	.....	12
60	Luders	Twin Screw	12	39	100	600	.....	14
62	Rochester	V-Bottom	14	42	.....	.....	.....	.....
73	Densmore	Cruiser	12-9	48	300	1000	.....	18

(Continued on page 104)

Questions and Answers on Lesson No. 9

Navigating Instruments, The Log and Log Line, The Lead and Lead Line, The Chronometers Course Protractor, Etc.

1. Q: What navigating instruments should be carried aboard a small cruiser?

   A: *Compass, celluloid course protractor, dividers (bronze), pelorus or bearing finder, patent log and log line, lead and lead line, good timepiece, deviation card, log book, charts, coast pilot, lake survey bulletin, tide table, buoy list, light list.*

2. Q: How is the depth corresponding to two fathoms marked on the lead-line?

   A: *Two strips of leather.*

3. Q: How is the depth corresponding to three fathoms marked on the lead-line?

   A: *Three strips of leather.*

4. Q: How is the depth corresponding to five fathoms marked on the lead-line?

   A: *White rag.*

5. Q: How is the depth corresponding to seven fathoms marked on the lead-line?

   A: *Red rag.*

6. Q: How is the depth corresponding to ten fathoms marked on the lead-line?

   A: *Leather with hole in it.*

7. Q: What depths are indicated by three strips of leather?

   A: *Three fathoms, Thirteen fathoms.*

8. Q: What depths are indicated by a white rag?

   A: *Five fathoms, Fifteen fathoms.*

9. Q: What depths are indicated by a red rag?

   A: *Seven fathoms, Seventeen fathoms.*

10. Q: What depth is indicated by two knots?

    A: *Twenty fathoms.*

11. Q: What depth is indicated by three knots?

    A: *Thirty fathoms.*

12. Q: What depth is indicated by four knots?

    A: *Forty fathoms.*

13. Q: What depths are indicated by one knot?

    A: *Twenty-five fathoms.*

14. Q: What is meant by "marks"?

    A: *Fathoms which correspond with the depths marked are called "Marks."*

15. Q: What is meant by "deeps"?

    A: *The intermediate fathoms which do not correspond with the depths marked are called "Deeps."*

16. Q: What is meant by "arming the lead"?

    A: *Filling the hollow in the base of the lead with tallow or other sticky substance so that particles of the bottom will adhere to it.*

17. Q: Does the patent log indicate distances in Statute or Nautical miles?

    A: *Some indicate Statute miles and some indicate Nautical miles. One must be careful to ascertain by a marking on the patent log whether the log indicates distance in Statute or Nautical miles.*

18. Q: In using the Chip log, if 73-1/3 feet of line flow over the taffrail in five seconds, what is the speed of the boat through the water?

    A: *Ten miles an hour.*

19. Q: If, when using the ground log, 88 feet of the line pass over the taffrail in five seconds, what is the speed of the boat over the bottom?

    A: *Twelve miles an hour.*

20. Q: If the observations mentioned in questions 18 and 19 were taken simultaneously, what would be the speed of the current?

    A: *Two miles an hour.*

21. Q: Would the current mentioned in example number 20 be fair or head?

    A: *Fair.*

22. Q: An observation taken with a pelorus which is set with the boat's compass which has a deviation of one point west shows SW. What is the magnetic bearing?

    A: *SW x S*

23. Q: If the bearing of an observation taken by the pelorus which is set with the boat's compass which has a one point east deviation is NE by E, what is the true bearing in the location where the variation is ½ point west?

    A: *NE x E ½ E*

24. Q: A patent log shows the followin readings: 10 A. M: 2.75, 10.30 A. M. 5.25. What is the speed of the boat?

    A: *Five miles per hour.*

25. Q: A patent log shows that it requires 7½ minutes to cover one mile. What is the speed of the boat?

    A: *Eight miles per hour.*

26. Q: Are patent logs absolutely accurate?

    A: *No.*

27. Q: What care must be taken in the use of patent logs in reference to the distance which the rotator should be towed from the stern of the boat?

    A: *Keep rotator at sufficient distance astern so that it will not be in boat's wake or influenced by propeller action.*

28. Q: What conditions are likely to cause patent logs to give inaccurate readings?

    A: *Slow speed of boat, waves and abnormal sea, drifting sea-weed, fouled rotator, etc.*

29. Q: What is a chronometer?

    A: *An accurate time-piece.*

30. Q: What is meant by the chronometer rate?

    A: *The amount in seconds or fractions thereof which the Chronometer gains or loses each day.*

31. Q: New York City is located in longitude 74 degrees west—Peoria, Illinois, in 89 degrees west. When it is noon by suntime in New York City, what time is the suntime in Peoria? (Omit any considerations of the equation of time.)

    A: *11 A. M.*

32 Q: Portland, Maine, and New Bedford, Mass., are both located in approximately 70 degrees west longitude. However, the latitude of Portland is 43 degrees north and the latitude of New Bedford is 41 degrees north. Is there any difference in suntime between these two cities?

    A: *Approximately none.*

Yard and Shop

Notes of Interest to Both Owner and Manufacturer

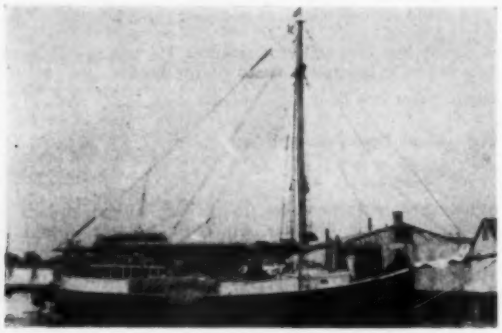
J. V. B.'s Change Name

THE well known J. V. B. marine engine which has been sold under that name for a long time is now being manufactured exclusively for the Elco works of Bayonne and will in future be called Elco engines. These engines have been used in the cruisette models and other boats built by this company and the distribution and sale will be handled entirely by this company. The Wellman-Seaver-Morgan Company of Cleveland will continue to manufacture these machines, but the distribution will be entirely through the Elco organization.

A ferry-boat at Vantage, Wash., which is equipped with two Model D-6 Scripps engines so that they can run either engine or both at any time. In two years of operation the total time lost due to motor repair has been less than two hours. The Columbia River, across which this ferry operates, is 2,500 feet wide

New Diesel Engine Ready Soon

Announcement has been made that the compound type Diesel engine invented by Elmer A. Sperry, the inventor of the Gyroscopic ships stabilizer and the Gyro-compass, as well as numerous other wonderful mechanical devices, is to be manufactured and produced in quantities at the large plant of the Newport News Shipbuilding & Dry Dock Company, Newport News, Va. The production and distribution of these machines is to be under the direct personal charge of D. J. Carrison of the Oil Engine Division of this company. This engine is to be fabricated in sizes ranging from 20 to 200 h. p. The weights of the machines will be kept at about fifty pounds per horse-power, while the fuel consumption will not exceed one half pound of fuel oil per h. p. h. The operating principle of this machine is such that there are two high pressure cylinders operating on the four stroke cycle, while the intermediate low pressure cylinder operates on the two stroke cycle using the exhaust from the high pressure cylinders in turn. Remarkable efficiencies have been found with these machines and their production will shortly be under way.



Fishing sloop Natalie, 22 tons, recently fitted with a Wolverine 42 h. p. kerosene gasoline engine. At the same time she also added a radio-phone set which enables her to select the most suitable market for her cargo of fish

War Department Surplus

As most everybody already knows the War Department is offering large quantities of every conceivable form of commodity for a quick sale. The termination of the war left in the hands of the War Department tremendous volumes of materials of every kind. These are now being disposed of and it is possible to purchase anything from wrist watches to aeroplanes, and from clothing to steamships. Industrial consumers of raw materials are taking advantage of the opportunities offered by Uncle Sam and are purchasing these materials in large quantities. It is worth the time expended for every executive to send for copies of the catalogs which are issued to describe these sales in detail. It is merely necessary to write to the Chief Sales Promotion, Room 2515 Munitions Building, Washington, D. C. The quality of the materials offered and the method of selling by sealed bids places the entire profits on the side of the purchaser. It is the Governments aim to distribute these vast stocks of supplies as rapidly as possible and the wise business man should familiarize himself with what the War Department has to offer.

Do Your Christmas Shopping Early

Rather a strange comment to make for the benefit of a motor boatman. About this time of the year many people begin to shop around, keeping a weather eye open for suitable gifts for their yachting friends. The problem can be solved very easily by calling at the retail store of the E. J. Willis Company, in New York, and selecting suitable gifts from among their stocks. They have been fortunate in being able to secure from the U. S. Navy and Shipping Board a varied assortment of practical articles which are being sold at a fraction of their cost. This merchandise is all brand new and the values can be described as phenomenal. There are binnacles and lamps, fire extinguishers and search lights, and a great array of other useful items.

Sea Sled Luz Reaches Destination

Cable advices have been received announcing the arrival of the Sea Sled Luz at Colombia, South America. Following the acceptance trials at West Mystic, Conn., Luz was cradled and loaded onto the deck of the S. S. Metapan. This steamship left New York and arrived at Cartagena on October 23. Unfavorable conditions awaited the boat as the Magdalena River was at a high flood stage and full of debris

(Continued on page 104)

Baboy, a 30-footer equipped with a 40 h.p. Red Wing motor, is a new boat just finished for W. H. Moreton of Boston. A speed of 14 miles can be obtained and the fuel consumption is very low

"DOLPHIN"

the largest American-built Diesel Yacht

MEASURING 180 feet in length, luxurious as a hotel, "Dolphin" is one of the most palatial crafts ever launched.

"Dolphin" was designed and built under the direction of the well-known naval architects, Cox & Stevens for Mr. Mortimer L. Schiff of New York, and is the largest Diesel yacht ever built in this country.

Her 550 h. p. Winton Diesel engines give her a speed in excess of 16 m. p. h. with a cruising radius of 6,000 miles.

Built of the best materials, it is only logical that all of "Dolphin's" bright work is varnished with Valspar—the waterproof varnish that never turns white.

Photos © Morris Rosenfeld

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VALSPAR
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VALENTINE & COMPANY

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New York Chicago Boston Toronto
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Interior view of the spick and span Deck House, with its polished brass and gleaming woodwork.

Cable Address:
BROKERAGE, NEW YORK

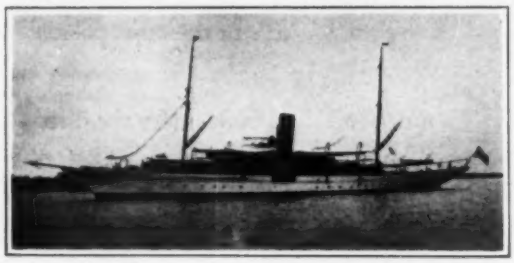
COX & STEVENS

Telephone:
WHITEHALL 2700

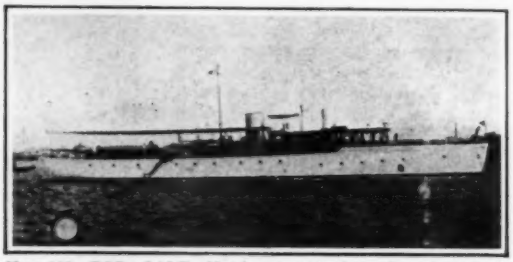
NAVAL ARCHITECTS---MARINE INSURANCE---YACHT BROKERS

25 BROADWAY, CUNARD BUILDING (Morris Street Entrance), NEW YORK

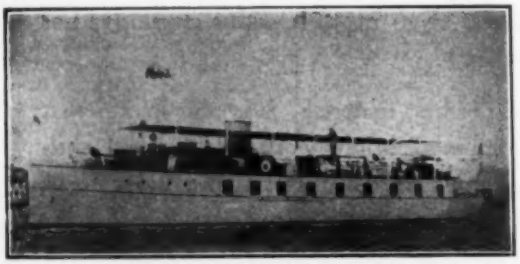
Complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request.



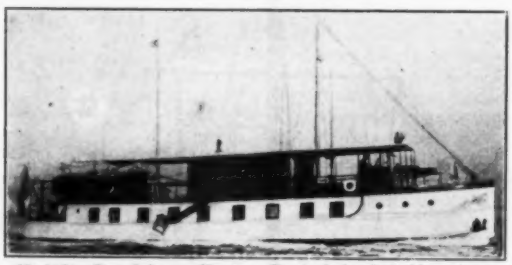
No. 341—For Sale or Charter—Large, sea-going steam yacht. Palatial accommodation. Unusual opportunity. Several similar and smaller available craft. Cox & Stevens, 25 Broadway, New York.



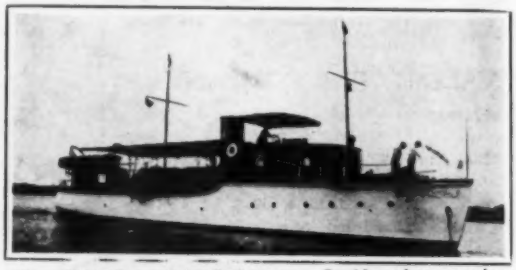
No. 885—FOR SALE—Handsome 120 ft. twin-screw, steel, motor yacht; exceptionally fast and able. Splendid accommodation. Our Design. Cox & Stevens, 25 Broadway, New York.



No 1662—For Sale or Charter—Attractive 90-ft. modern power houseboat. All the comforts of a country home. Large saloon, four staterooms, two bathrooms, handsomely furnished. Cox & Stevens, 25 Broadway, New York.

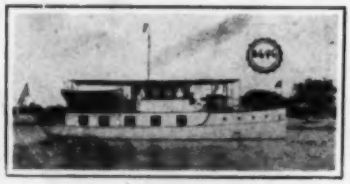


No.3151—For Sale or Charter—Particularly desirable twin-screw houseboat; 77x17.6x3ft. Speed 11 miles; two 6 cylinder 60-70 H. P. Standard Motors new 1919. Large deckhouse containing social hall; main salon, two double and two single staterooms, two baths and toilet rooms, etc. Handsomely finished and furnished Cox & Stevens, 25 Broadway, N. Y. C.

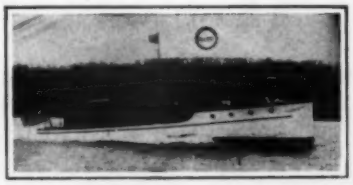


No. 3064—For Sale—Twin-screw Semi-houseboat cruiser; 80'x16'x3'2" draft. Speed 11-12 miles. Deck dining saloon, 4 double staterooms, 2 baths and toilet rooms. Large available deck space. Cox & Stevens, 25 Broadway, New York.

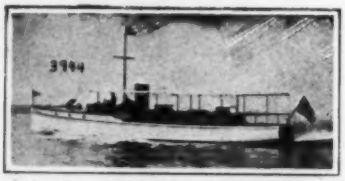
No. 3930—For Sale or charter—Recently built motor houseboat; 61 x 16 x 3 ft. In commission. Speed 10 miles; 6 cyl. Standard motor. Large deck saloon, three staterooms, bathroom, etc. Excellent opportunity. Cox & Stevens, 25 Broadway, New York.



No. 2646—For Sale—Attractive 52 ft. power houseboat. Standard motor. Speed 10 miles. Deck dining saloon, double and single stateroom, toilet room and shower. Price reasonable. Cox & Stevens, 25 Broadway, New York.



No. 4050—For Sale—High class fast 52 ft. twin-screw enclosed bridge deck cruiser. Speed up to 30 miles; two 8 cyl. 200 H. P. Speedway motors. Double stateroom, saloon with two pullman berths, toilet room, galley, etc. In commission. Cox & Stevens, 25 Broadway, New York.



No. 3944—For Sale or Charter—Practically new, twin screw 60 ft. bridge deck cruiser. Best craft of type and size available. Saloon, double stateroom, bathroom, etc. In Commission. Cox & Stevens, 25 Broadway, New York.

PLANS, PHOTOGRAPHS AND PRICES ON REQUEST.

Advertising Index will be found on page 130

NAVAL ARCHITECTS
ENGINEERS
YACHT BROKERS
MARINE INSURANCE

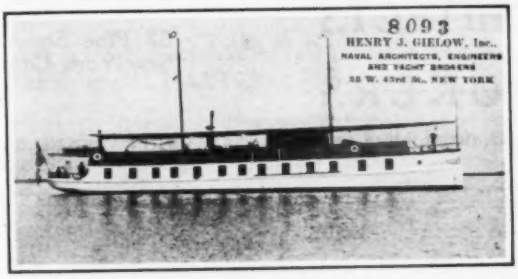
HENRY J. GIELOW, Inc.

25 WEST 43rd STREET, NEW YORK

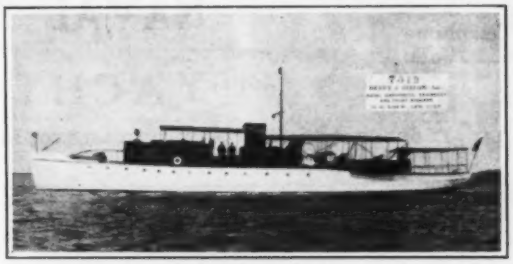
Tel.: Murray Hill 9134
Cable Address:
Crogie, New York
A.B.C. Code

Plans and specifications for new yachts of any size or type should be prepared now to assure delivery for next year. Have plans of new yachts, all types, on file now.

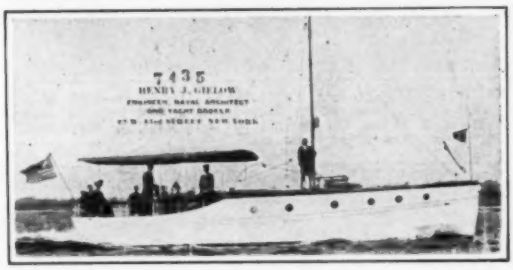
We have a most complete and up-to-date list of steam and motor yachts of all sizes, sail, auxiliary, and houseboats, on file in our office, kept constantly up-to-date by a thorough and comprehensive canvass of the entire yachting field from time to time. We are in a position to submit full information on any type of boat, upon request.



No. 8093—For Sale or Charter—Desirable 95 ft. twin screw power houseboat. Standard motors. Large saloon, three double staterooms, two bathrooms, and deck lounging saloon. Suitable for Northern and Southern cruising. Now in full commission. Henry J. Gielow, Inc., 25 West 43rd St., New York City.

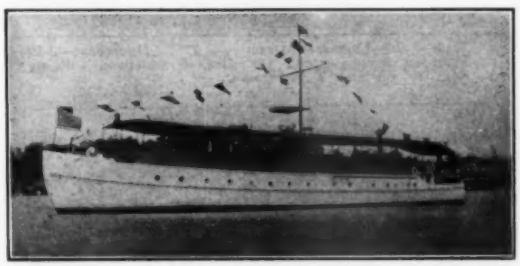


No. 7013—ForSale—Opportunity to buy twin-screw Diesel motor yacht reasonable. Delivery Sept. 1. 110 x 18 x 6 ft. 6 in. Copper sheathed. 3 large, airy staterooms, each with separate toilet room, one bath. Completely found, electric fans and fully screened. Able sea boat has twice cruised West Indies. Fuel cost sixty cents per hour at 10 knots. All overhauled 1922. H. J. Gielow, Inc., 25 West 43rd St., New York City.



No. 7435—For Sale—Very attractive raised deck cruiser, 40 ft. x 10 ft. x 3 ft. 6 in. Speed 10 miles. 20th Century motor. Double stateroom, large saloon, galley, toilet room, etc. All in first class condition. Henry J. Gielow, Inc., 25 West 43rd St., New York City.

No. 8032—For Sale or Charter most desirable 60-foot houseboat for Southern cruising. Large saloon, three double staterooms, bathroom. Exceptional large deck space. All in first class condition throughout. Henry J. Gielow, Inc., 25 West 43rd Street, New York City.



No. 8067—For Sale or Charter—Desirable twin-screw cruising houseboat suitable Florida and Northern waters. 88 ft. x 19 ft. x 3 ft. 6 in. 20th Century motors. Boat entirely overhauled and refitted 1920, three double and one single staterooms, saloon, deck saloon, sleep 8. Electric light and heating plants new 1920. Bath, two toilets. Has cruised Florida each year, good sea boat. Reasonable. Henry J. Gielow, Inc., 25 West 43rd Street, New York City.

No. 8177—For Sale—New houseboat cruiser completed spring delivery. 48 ft. x 13 ft. 6 in. x 3 ft. One double, one single stateroom, large saloon with two berths and deck saloon 12 ft. x 8 ft., sleeps six. Crew stateroom forward. Heavy construction, finished mahogany and cream enameled. Delco lighting plant. 40-50 H.P. 20th Century engine. All best workmanship. Speed 9-10 miles. Popular type for Florida and Northern cruising. Price reasonable based on present reduced building cost. Henry J. Gielow, Inc., 25 West 43rd Street, New York City.

No. 8054—For Florida Charter—Desirable 66-foot Cruising Houseboat. Large saloon, one double and four single staterooms, bathroom. Large deck saloon. Now in Southern waters. Henry J. Gielow, Inc., 25 West 43rd Street, New York City.

No. 8077—For Sale—Desirable cruising houseboat all in fine condition. Thoroughly overhauled 1921. Inspectable New York. 75 ft. x 16 ft. x 3 ft. 6 in. Winton motor, 6 cylinder 70 H.P. Three large staterooms, large deck saloon; newly furnished, screened throughout. Heavily built, able sea boat. Speed 10-11 miles. Price attractive. Henry J. Gielow, Inc., 25 West 43rd Street, New York City.

TAMS & KING

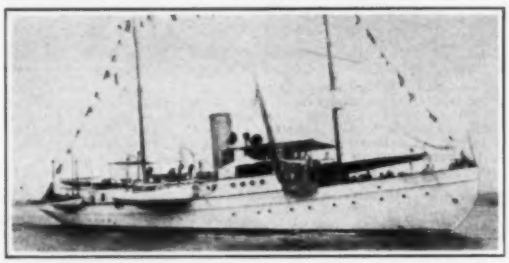
FORMERLY TAMS, LEMOINE & CRANE

Telephone 4510 John

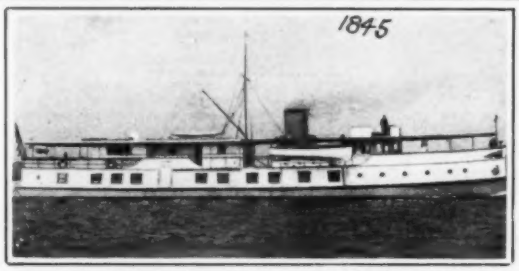
NAVAL ARCHITECTS AND YACHT BROKERS

52 Pine Street New York City

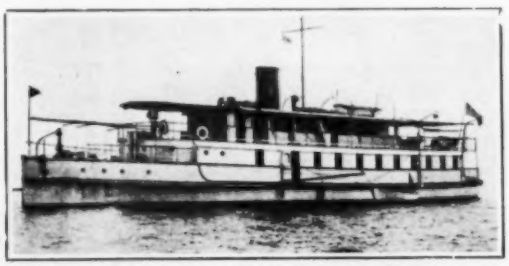
OFFER ALL OF THE DESIRABLE YACHTS AVAILABLE FOR SALE AND CHARTER, SOME OF WHICH ARE ILLUSTRATED BELOW



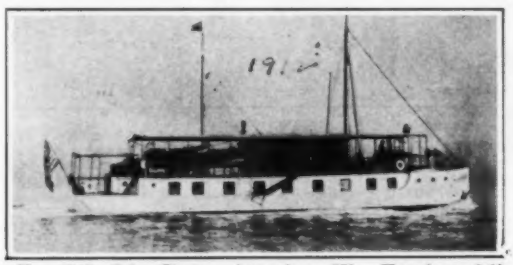
No. 26E—Sale—Ocean going steam yacht— 158' x 127' 7" x 24.8' x 12' 9" draft. Built 1913. Commodious owner's accomodations—Completely and thoroughly overhauled, refitted and refurnshed under our supervison in Fall 1920.



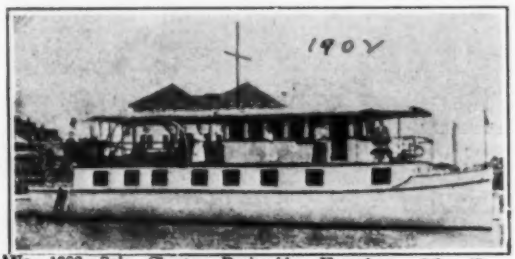
No. 1845—Sale—Modern Triple Screw Houseboat—120' 9" x 21' x 3' draft. Designed by Tams & King and built in 1920—3 Meitz & Weiss Oil engines—6 staterooms, 4 bathrooms, dining saloon, deck sitting room etc.



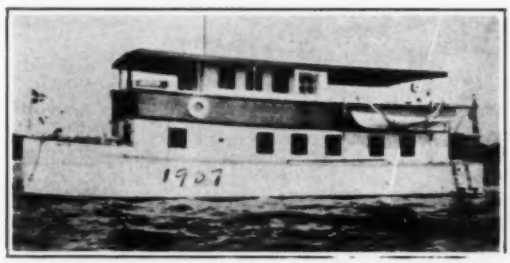
No. 1895—Sale charer—120' Twin Screw Houseboat 2-6 Cylinder 220 H. P. Standard Motors—7 staterooms. 2 bathrooms, large dining and sitting room.



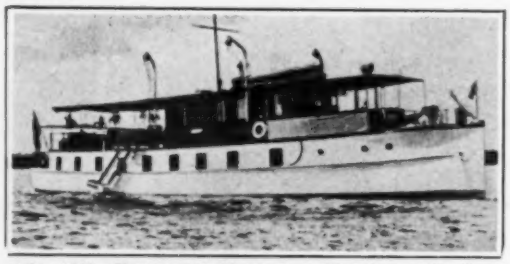
No. 1912—Sale—Charter—Attractive 77' Houseboat—2-50 H. P. Standard motors, speed 11 miles, 4 staterooms, dining saloon, deck saloon and 2 bathrooms.



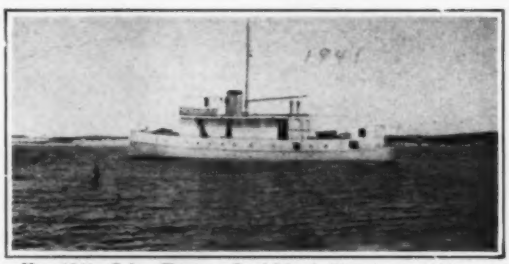
No. 1902—Sale—Charter—Desireable Houseboat 64' 6" x 17' 6" x 3' 2" draft. Built 1915—50 H. P. 20" Century Motor. Speed 9 miles—3 Staterooms, dining saloon and deck saloon, bathroom, etc.



No. 1937—Sale—Charter—50' x 15' x 3' draft—Built 1919. 3 Staterooms, dining saloon and bathroom.



No. 1800—Charter—80' Mathis type Houseboat, 2-70 H. P. Standard motors — 4 Staterooms, 2 bathrooms and 2 saloons.



No. 1941—Sale—Charter—Semi-Diesel Houseboat—100' x 23' x 4' draft—Built 1920—2-100 H. P. Fairbanks-Morse Engines. Large owner's accomodations.

Advertising Index will be found on page 130

YACHT BROKERS
NAVAL ARCHITECTS

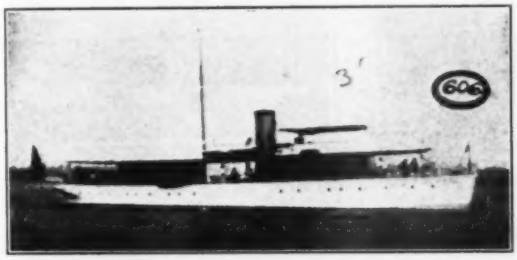
Henry C. Grebe & Co., Inc.

MARINE INSURANCE
SURVEYING

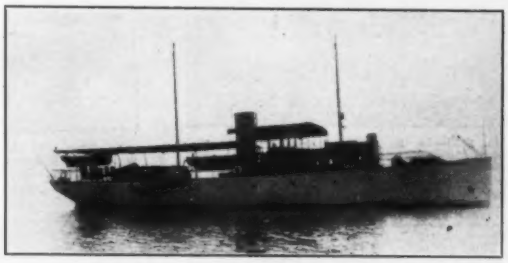
6 NORTH MICHIGAN AVE., CHICAGO

TELEPHONE CENTRAL 1261

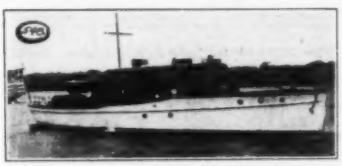
We have a complete list of all steam and power yachts, auxiliaries, and houseboats, which are for SALE and CHARTER. Plans, photographs and full particulars furnished on request.



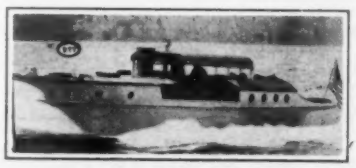
No. 606—For Sale—Modern steam yacht, 123 ft. x 17 ft. x 6 ft. draft. Speed up to sixteen miles. Three single and two double staterooms. Dining and social hall on deck. In excellent condition throughout. The finest yacht of her size available. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



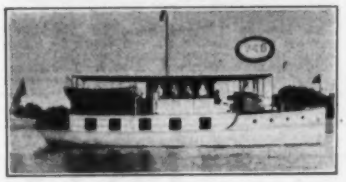
No. 584—For Sale or Charter—90 ft. twin screw cruiser. Recent build and modern design. Winton motors. Speed up to 14 miles. Dining saloon on deck. Five staterooms, etc. Attractively furnished and in excellent condition throughout. Located Great Lakes. Henry C. Grebe & Co., Inc., 6 N. Michigan Ave., Chicago, Ill.



No. 548—For Sale—Attractive bridge deck power cruiser. 65 ft. x 13 ft. x 4 ft. 8 in. draft. Thoroughly modern and splendid seaboat. Bargain for immediate sale. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.

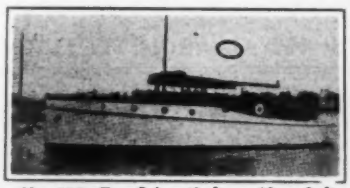


No. 977—For Sale—50 ft. Great Lakes Cruiser. Speed up to 20 miles. Accommodate 6 to 8. Excellent condition throughout. New motor 1922. Reasonable price. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



No. 945—For Sale or Charter—Modern 52 ft. houseboat. Recent build. One single, one double stateroom and bath. Attractively furnished. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.

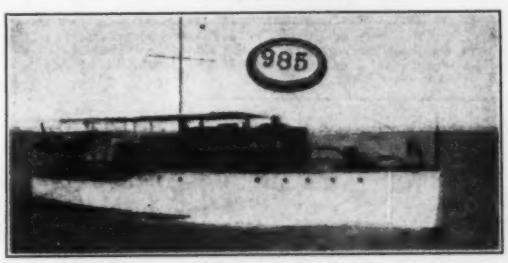
No. 1018—For Sale—54 ft. Great Lakes express cruiser. Speed 20-25 miles per hour. Double stateroom and large main saloon. Two toilets and shower bath. Well equipped and in excellent condition. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



No. 106—For Sale—40 ft. x 10 x 2 ft. 10 in. power yacht. One double stateroom, dining saloon, galley, two toilets. Sleeps 6-8. Speedway self-starting motor. Low price. Excellent condition. Henry C. Grebe & Co., Inc., 6 N. Michigan Ave., Chicago, Ill.

No. 1019—For Sale—60 ft. twin-screw express cruiser. Excellent seaboat. Speed up to 22 miles per hour. Accommodations excellent. Price reasonable. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.

No. 941—For Sale or Charter—Attractive twin screw houseboat, 85 ft. x 19 ft. x 3 ft. 20th Century engine. Conveniently arranged. Large deck saloon. Five staterooms, three bathrooms. Handsomely furnished. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



No. 985—For Sale—73 ft. x 13 ft. 6 in. x 3 ft. 6 in. twin-screw cruiser. Recent build. Two single and one double stateroom. Two toilets with showers. Dining saloon and deckhouse. A beautiful boat, mahogany finish throughout and as good as new. Henry C. Grebe & Co., Inc., 6 N. Michigan Ave., Chicago, Ill.

HENRY H. JENNINGS HERMAN JAGLE

H. H. JENNINGS COMPANY

Telephones Bookman 5456 and 5457

YACHT and SHIP BROKERS

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TRIBUNE BUILDING

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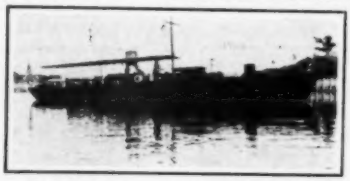
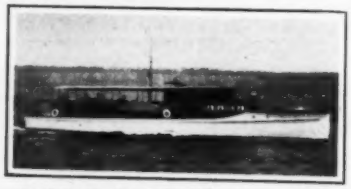
Our 25 Years' Experience and Our Knowledge of the Yachts We Offer, Insure Satisfaction to Clients

SEND SIX CENTS FOR OUR ILLUSTRATED CATALOGUE

No. 2254—55 ft. bridge deck cruiser. Two double staterooms, main saloon, two toilet rooms. Two berths and toilet for crew. Sterling Motor. Speed 13-14 miles. Electric lights, etc. Splendid proposition.



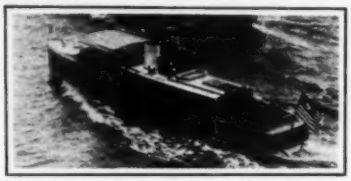
No. 1788—75 ft. Twin Screw Power Yacht. Two double staterooms; Three berths in main saloon; Sofa berth in deckhouse; Two toilets and 15-18 Knots. Price attractive.



No. 2839—80 ft. Twin Screw Power Yacht. Three staterooms; Saloon and Dining saloon. Two toilets and bath. Two 150 H. P. Motors; Speed 18 miles. Electric lights, etc. Splendid proposition.

No. 4439—60 ft. Power Houseboat. Two double and one single staterooms; Two berths in dining saloon; Sofa berth in deckhouse; Two toilets and bath. Captain's room, etc. 70-90 H. P. Standard Motor. Speed 12-13 miles. Hot water heat; Electric lights, etc.

No. 2358—60 ft. Twin Screw Power Yacht. Double stateroom; Main saloon with two berths. Bath; etc. Two 50 H. P. Sterling Motors. Speed 14 miles. Electric Lights etc. Splendid propesition.



No. 2359—50 ft. Twin Screw Express Cruiser. V Bottom; Double planked mahogany and teak. Two 200-225 H. P. Sterling Motors; Speed 30-33 miles. Ideal for ferry service.

FRANK BOWNE JONES

TELEPHONE Whitehall 1170

CABLE ADDRESS "Windward", N.Y.

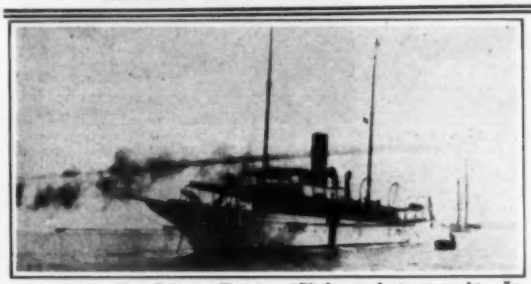
YACHT AGENT and SHIP BROKER

CUNARD BUILDING, 25 BROADWAY, NEW YORK

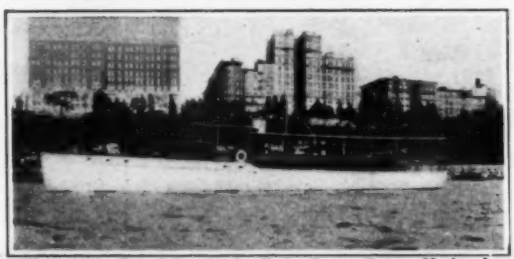
OFFICE NO. 1051

Branch Office Miami, Fla. January, February and March

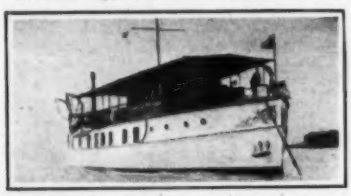
SALES AND CHARTERS—NAVAL ARCHITECTURE—MARINE INSURANCE



No. 5547—For Sale or Charter—170 ft. steel steam yacht. In excellent condition throughout. Dining saloon and social hall on deck. 6 staterooms, 2 baths. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.

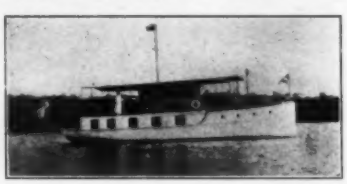


No. 6692—For Sale—83 ft. Twin Screw Power Yacht; best design and build; 20th Century Motors; Deck saloon; double and single staterooms, dining saloon and bath below. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.



No. 6913—Mathis 75 ft. power house yacht. Deck dining saloon and 4 staterooms, baths, handsomely furnished. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.

No. 3898—For Sale—Practically new 75 ft. Lawley Twin Screw Express Yacht; Speed 21 miles per hour; Sterling motors; Excellent accommodations; Price reasonable. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.



No. 835—For Sale or Charter—Mathis 52 ft. Power Houseboat; deck house; 1 double and 1 single stateroom and saloon below. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.

Advertising Index will be found on page 130

WILLIAM GARDNER & CO.

Naval Architects, Marine Engineers and Yacht Brokers

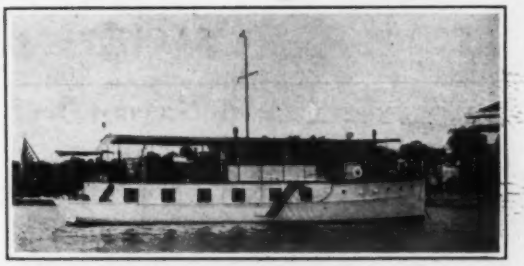
1 Broadway, New York

Telephone Call 8858 Bowling Green

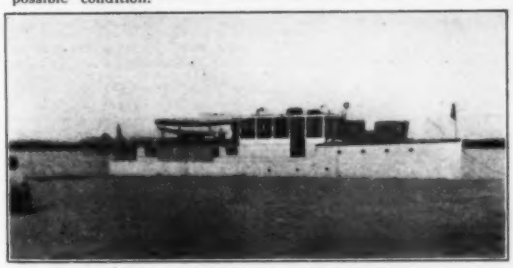
Cable Address Yachting, N. Y.

We have a complete list of Yachts of every description for sale and charter. Plans, Photos and full particulars furnished on request.

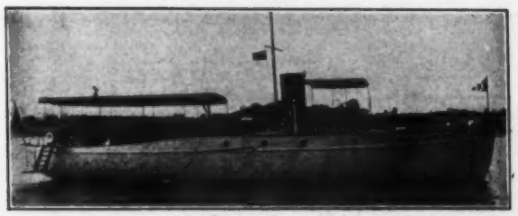
No. 1852—Twin screw power yacht, 95'x16'x4'6"; built 1917; two 6 cylinder Winton motors; flush deck type, with continuous deckhouse. Splendid boat for Southern waters. Best possible condition.



No. 118—Ideal Florida houseboat, 61'x16.2x3.2; built by Mathis Company in 1920; six cylinder Standard motor; two doube and one single stateroom, two saloons, etc.



No. 2303—Enclosed bridge deck cruiser, 52' x 12.3; two 6 cylinder 150 h. p. motors; speed 15/20 miles; stateroom, large saloon, bath room, toilet room, etc. In commission Southern waters.



No. 1949—Able raised deck cruiser, 62 ft. x 13.9; new 8 cylinder Sterling motor; speed 13½ miles. Single and double stateroom, main saloon, etc. In first class condition.

R. M. HADDOCK

Suite 401
50 East 42d St., New York City
(Opposite Grand Central Station)

NAVAL ARCHITECT and YACHT BROKER

Complete lists of all yachts now available for sale or charter

Marine Insurance

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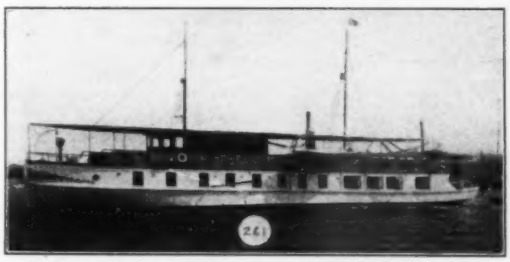
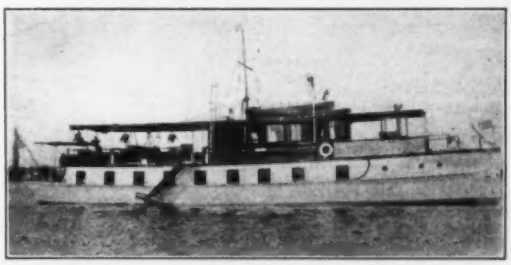
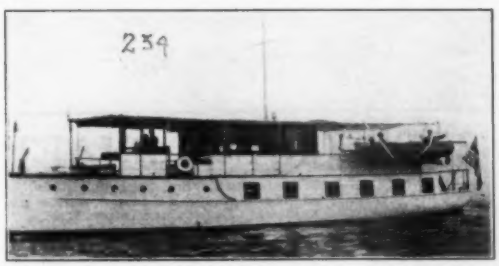


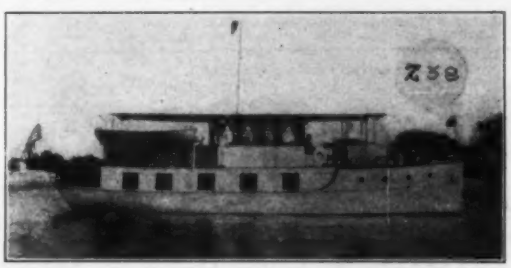
No. 261—FOR SALE. Twin-screw motor houseboat. L. O. A. 95 feet. Large saloon, three double staterooms, two bathrooms and a deck lounging saloon. Standard motors. An excellent cruising home for either Northern or Southern waters.



No. 223—FOR SALE OR CHARTER. A very desirable 80' motor houseboat. Suitable for cruising along the coast and inland waters. As the draft of this yacht is only 3' one can sail very close to the shore and get all the enjoyment that is possible in this type of yacht. Photograph and description upon request.



No. 234—FOR SALE. A Mathis designed and built 61-foot motor houseboat. A very desirable type of yacht for Florida waters. Accomodations consist of two double and one single staterooms, one bath and two toilets. Two additional berths in saloon and one in deck house. Plenty of deck space. Standard motor. Speed up to 11 M.P.H. Photograph, plan and description upon request.



No. 238—FOR SALE OR CHARTER. A 52-foot Mathis designed and built houseboat. Standard motor. Speed up to 9-10 M. P. H. Accommodations consist of one double and one single stateroom. Two additional berths in saloon and one deck house, bath and toilet. Fully screened throughout. Photograph and description upon request.

THE MOTOR BOATING MARKET PLACE

The rate for "For Sale" and "Want" advertisements is 6 cents per word, minimum $1.50. If an illustration is used, the charge is as follows, which includes the making of the cut:

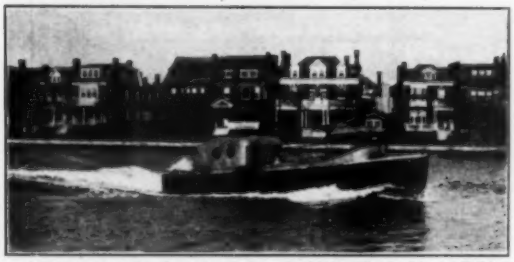
Cut one inch deep, two inches wide..... $ 7
Cut 1½ inches deep, three inches wide..... $10
Cut 2¼ inches deep, four inches wide..... $15
Cut 2¾ inches deep, 7 inches wide..... $20

Terms: Cash with order.

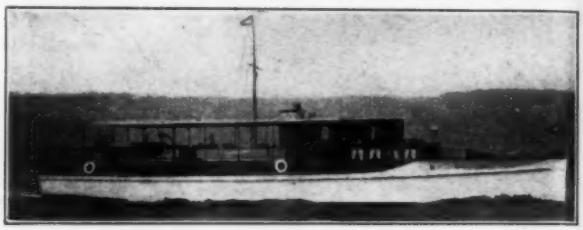
Opportunities for the Motor Boatman

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR BoatinG.

Classified advertisements set entirely in small light face type. No extra charge for capitals. Bold face type used at display rate, $12 per inch, single column.



For Sale—35 Ft. Captain's Gig. Built by U. S. Navy, White cedar, copper fastened, brass trimmed throughout. Van Blerck EE-6 engine. Engine rebuilt by factory mechanic summer 1922. Hull overhauled same time. Ideal boat Florida fishing. Price $2500.00. C. Custer Robinson, Richmond, Va.



For Sale:—81' twin-screw cruiser, speed 17 miles, 1 single and 2 double staterooms, bath, etc. An unusually high class yacht which has had the best of care and can be purchased at a very reasonable price. An excellent opportunity for one desiring a most attractive yacht. Further particulars from Harry W. Sanford, Yacht Broker, 501-Fifth Ave., New York City, N. Y.—Other yachts of different lengths and types for sale or charter.

No. 3984—FOR SALE—Exceptionally able 42 ft. trunk cabin cruiser. Heavy duty four cylinder 37 H. P. Standard motor; extra heavy construction; good accommodation and large cockpit. Excellent condition. Bargain for quick sale. Further particulars from Cox & Stevens, 25 Broadway, N. Y. C.

FOR SALE BY OWNER
Express cruiser yacht "TENNESSEE" like new; 75 x 12½ x 3½ draft; two 50-85 H. P. Sterling Engines; separate electric light plant. Built to naval specifications and, therefore, free of government tax. Also 8 cylinder, about 300 H. P. Sterling Engine. I. T. Rhea, Mente & Co., Inc., New Orleans, La.

For Sale—Power cruiser 47 ft. x 12 ft. x 3 ft. 9 in. Built August, 1920. Speed 12 M.P.H. 4 cyl. Sterling engine. Separate electric lighting plant. Mahogany finish below and on deck. 3 toilets. Crew's quarters sleeps two. Owner's quarters, two staterooms and main saloon, sleeps seven. Bridge deck control. Engine room in separate compartment under. In A1 shape, fully found and now in commission. For further particulars address MoToR BoatinG, Box 35.

For Sale—Built in 1922, 26'x6'6" Hacker Runabout, finished in Mahogany and Nickel; 100 Horse Power, Hall-Scott Motor, Speed 33 miles per hour. One of the finest runabouts in America. For price, etc., address C. Eugene Titman, 242 N. 16th St., Philadelphia, Pa.

For Sale—New and rebuilt marine engines. Write for list of bargains. Anderson Engine Co., 4032 No. Rockwell St., Chicago, Ill.

FOR SALE—Subchaser, 110 ft. Engines completely overhauled and rebuilt, electric plant, batteries, etc., perfect, ready for service completely equipped. Large supply new spare engine parts, rope, life preservers, etc. Very reasonable offer accepted. Radio equipment optional. Inspected at New York, address box 45, Motor Boating.

Watercar day cruiser, first class condition, 20 miles, $850. Special low prices on new, up to the minute mahogany, 20 ft Watercar runabout, and conventional V-bottom sedans, hulls only or complete. Bronx Boat Works, foot Willow Ave., near E. 132nd St., New York, N. Y.

A few pair of very powerful and clear Bausch & Lomb Prism Binoculars, 6 x 30 power, complete with case, etc. Worth $75.00, will take $40.00. Percy M. Child, 1110 14th St., N. W., Washington, D. C.

BARGAIN—Yacht tender, 25 x 6 mahogany and non-sinkable. Consolidated Shipbuilding rebuilt 1918. Canvas cabin, 4 cylinder speedway, electric Bijur motor generator starter, Bosch high tension magneto. Insured, very reasonable—$550—excellent buy. Ben Altstadt, Cathedral 10030, 25 St. Nicholas Ave., N. Y. C.

Van Blerck Motors Rebuilt, cylinder ground oversize "M" and "M M" piston's rings and wrist pins. All work factory done. J. F. Johnson & Co., 3537-39 N. 9th St., Phila., Pa.

"GRAY BARGAIN LIST"

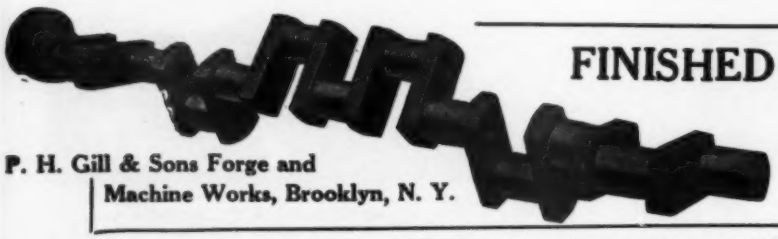
2-Cylinder - - 12 to 15 H. P. Fairbanks Morse $100.00
2- " - - 16 H. P. Model "T" Gray 190.00
2- " - - 2 H. P. Detroit 25.00

Above In First Class Running Order

4-Cylinder 10 to .25 H. P. Gray used as demonstrator guaranteed equal to new 398.00

Berling, Splitdorf, & Kingston Magnetos 5.00 Each

Gray Motor Co., 2106 Mack Ave., Detroit, Mich.



P. H. Gill & Sons Forge and Machine Works, Brooklyn, N. Y.

FINISHED CRANK SHAFTS

We are furnishing them to some of the leading marine engine builders. Carbon and Alloy Steel. Heat Treated to your own specifications. We grind all Pins and Bearings. Forged, machined, and finished complete in our own plant. Let us quote you.

Advertising Index will be found on page 130

REBUILT ENGINES

Eighteen thousand square feet of floor space devoted to the display of over three hundred new and rebuilt marine engines. The largest show-room of its kind in the world.

A general view of the North East Quarter of the main floor, showing a few of the larger and heavier types of engines in stock.

Our REBUILT ENGINES are covered by our IRON CLAD GUARANTEE.

To those interested in a brand new engine we can offer attractive propositions on the following motors, taking your present machine in exchange as part payment—

STERLING, WOLVERINE, FRISBIE, KERMATH, PEERLESS, DOMAN and REGAL.

We also distribute the UNIVERSAL from our Philadelphia branch—Bourse Building.

SEND FOR OUR BARGAIN LIST.

BRUNS, KIMBALL & CO., 153-155-157-159 West 15th Street, New York City.

Telephone: Watkins 0467-0468

Honestly Rebuilt

Don't buy any motor until you have our latest price list of Masters Rebuilt Motors. Thoroughly overhauled, all worn parts replaced, refinished and guaranteed like new. All sizes. Lowest prices. Write to-day.

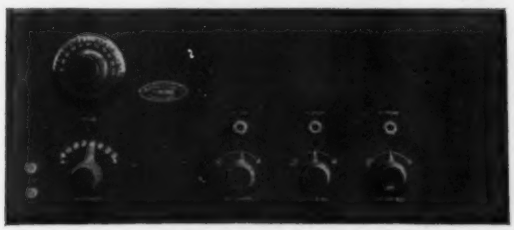
W. L. MASTERS & CO.

Largest Engine Dealers in Central West

231 No. State St. Chicago, Ill.

AUTHORIZED DISTRIBUTORS FOR

STERLING KERMATH UNIVERSAL FRISBIE
STEARNS EVINRUDE JOHNSON
HYDE PROPELLERS JOES REVERSE GEARS



THE SYNTONE RECEPTOR AMPLIFIER

A Quality Radio Receiving Set

The easiest set on the market to tune in the Radio Concerts broadcasted daily throughout the country. Mounted in a mahogany cabinet it forms a pleasing addition to the interior of any Home or Yacht. Absolutely guaranteed for high electrical efficiency and mechanical design. **Write for Descriptive circular.**

UNITED RADIO & ELECTRIC COMPANY
BROOKLYN, N. Y. 71 Sixth Avenue

NO CAULKING OR SEAM FILLING

for ten years if you use

ELASTIC SEAM COMPOSITION TRADE MARK

Used by the Government and by most steamship and Yacht Builders and by Amateur Builders.

Write today for catalog of

Elastic Seam Composition, Elastic Copper Paint, and Elastic White Yacht Paints.

H.B. FRED KUHLS 65th St. & 3rd Ave. BROOKLYN, N. Y.

Factory Rebuilt, Guaranteed Engines At Bargain Prices

The following engines have been honestly rebuilt in our factory and are all in excellent condition.

"BUFFALO" rebuilt engines carry our regular guarantee. Prices include shaft propeller, etc. Engines are worth a lot more money but slashing price reductions are made to clean up stock.

"BUFFALO" Engines:

H.P.	Type	No. Cyl.	Bore & Stroke	Engine Speed	Price Each
16-18	Medium Speed	4	4½ x 5	600	$ 500.00
50-80	Cruiser & runabout. Including complete electric starter.	4	6¾ x 9	500 to 800	1500.00
13-15	Heavy Duty	2	6 x 7½	350	590.00
20-22	Heavy Duty	2	7 x 9	350	875.00
26-30	Heavy Duty	4	6 x 7½	350	1000.00
40-45	Heavy Duty. Pair—right and left hand engines.	4	7 x 9	350	1350.00

"20th Century" Engine:

40-50	Heavy Duty. Complete with reverse gear, mechanical oiler, etc., thoroughly overhauled and including reboring and fitting new pistons. Price includes reverse gear and propeller.	4	6½ x 8½	450	875.00

Buffalo Gasoline Motor Co.
1274 Niagra St., Buffalo, N. Y.

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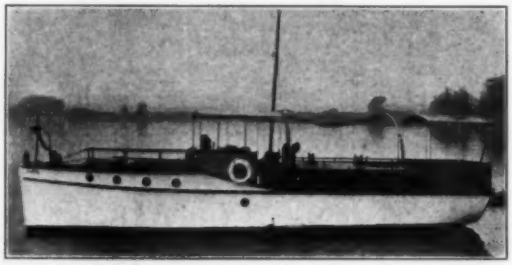
FOR SALE

39'-9" Bridge Deck Cruiser

No. 448—FOR SALE—High grade Day cruiser. 31' x 7' 6" x 2' 6". Built 1921. Toilet, galley and one berth forward. Enclosed bridge, roomy cockpit aft, speed 12 to 14 miles. Selfstarter and electric lights. Desirable for Florida fishing or ferry service. Located near Boston. A-1 condition throughout. Apply John G. Alden, 148 State Street, Boston, Mass.



39'9" x 10'6" x 3'6"—accommodates eight. Built 1919, engine 50 H.P. Peerless with selfstarter. 120 gallons of fuel and water, electric light, all upholstery practically new, sleep four in each cabin, two toilets, galley in aft cabin.

Get busy if you want a good boat cheap! Write to Yachtmen's Service Agency. 1233 Real Estate Trust Bldg., Philadelphia, Pa.

"MARINDA N," 37' 6" X 9' 6" X 2' 10", in commission in Florida. Fully equipped. 35-55 H.P. Sterling engine. Delco lighted. 1 row boat. Excellent condition. Two toilets. Accommodates five. If size suits, she is a bargain at $3500. H. F. Newell, 1401 Kirby Bldg., Cleveland, O.

FOR SALE—2—Speedway, 4 cyl. 4 cycle motors of 50 H. P. each, Bore 6" Stroke 6" in perfect condition, complete with reverse gears and couplings, one right hand and one left hand. Will sell separately at $400.00 each or both at $700.00. RED BANK YACHT WORKS, RED BANK, N. J.

For Sale:—Thirty-eight ft. cruiser, one man control. Fifty Horse Scripp Electric Starter Everything new. No reasonable offer refused. One 35 Horse Peerless complete.
Apply Box 24 Laurents Louisiana

FREE Illustrated Literatures. Outboards, New and Rebuilt Engines. Universal Joints, Pumps, Clutches, Gears, Hyde's, Gordon Reversible Propellers, etc. Canadian Boat & Engine Exchange, Toronto.

Hull: 21x20x5x2. All piano finish mahogany. Finest construction and condition. Cost $2,600 —Price $600. Ford, 31 East 42. N. Y. C.

FOR EXCHANGE: Will exchange for Yacht, undeveloped Orange Grove of 20 acres, 10 miles from Orlanda, Florida. Reason for disposing of same owner has other interests on coast. J. A. Kirkmyer, 1301 W. Broad St., Richmond, Va.

FOR SALE—1920, 9-12 H. P. Universal Motor, Clutch, complete to coupling—Atwater-Kent ignition with coil. Little used, like new. $185.00. Act quick. F. O. B. Jamestown, N. Y. Information D. Folsom, 301 Superior Bldg., Cleveland, Ohio.

TRIMOUNT WHISTLE BLOWER OUTFITS
Blower runs by friction contact with engine flywheel. Whistle of brass, nickel-plated.
Made in 3 sizes.

TRIMOUNT ROTARY HAND BILGE PUMPS
All bronze composition. Suction lift 6 to 20 feet. A lifelong convenience.
Made in 3 sizes.

TRIMOUNT ROTARY POWER Co.
50 Heath Street Boston, Mass.
(Factory: 292 Whiting Ave., E. Dedham, Mass.)

CUBAN ISLAND
Exchange.....or.....For Sale
10,000 Acres
Center of great Asphalt Deposits of Cuba 93 miles from Key West, Fla. Deep water. Thoroughly protected from storms. Low price.

CHARTER PARTIES
We also have Yachts for Charter, Sale or Exchange. Enjoy the season at Miami, Florida. Snare & Co., 34 N. Bay Shore Drive, Miami, Fla. Yacht Brokers & Estate Agents.

"Wanted:—A late model semi "V" bottom runabout hull complete less motor. Same to have room for at least six to eight passengers. Planking one half inch thick. Length from twenty-four to twenty-six feet. Must be in first-class condition and a bargain. State full description in detail." Box 44, Motor Boating.

For Sale: Speedway engine, 6 cyl. 140-H.P. 8½" bore, 10" stroke, excellent condition. Address, H. Chrystal Iron Works, 98 VanDyke St., Brooklyn, N. Y.

For Sale: 300 H.P. 6 cylinder Model F Sterling Marine engine.....$4500.00
60 H.P. 6 cylinder Auto Marine Eastern Standard with air starter $1000.00
ARTHUR DUVIC'S SONS, New Orleans, La.

For Sale—Thirty-foot glass cabin cruiser with large covered cockpit. Screened, just the cruiser for Florida waters, thirty-five electric started Peerless. Completely equipped with full camping outfit. Sleeps four or six. Practically new. P. O. Box 968, Jacksonville, Fla.

Four Cycle

4 HP Dunn, 2 cyl	$40.00
6 HP Dunn, 3 cyl	55.00
10 HP Doman, 2 cyl	110.00
12 HP Holliday, 2 cyl	105.00
12 HP Lamb, 2 cyl	115.00
12 HP Samson, 3 cyl	95.00
16 HP Dunn, 4 cyl	115.00
25-30 HP *New* Erd, 4 x 6, 4 cyl	215.00
45-50 HP Globe, heavy duty, with gear, etc.	650.00
One Cylinder, Two Cycle	
4 HP New Perfection	$65.00
6 HP Williams, heavy duty	55.00
8 HP Pierce, "as is"	35.00
Two Cylinder, Two Cycle	
6 HP Gray	$65.00
10 HP Northwestern	75.00
15 HP Ferro, "as is"	45.00
Three Cylinder, Two Cycle	
12 HP LaCrosse, "as is"	$35.00
15 HP Elmore	55.00
25 HP Ferro, 5 x 5, 2 cycle	115.00

THE BADGER MOTOR COMPANY
Milwaukee, Wis.

Advertising Index will be found on page 130

STATEMENT of the Ownership, Management, etc., required by the Act of Congress of August 24, 1912, of MoToR BoatinG, published monthly at New York, N. Y., for Oct. 1, 1922. State of New York, County of New York, ss.:

Before me, a Notary Public in and for the State and county aforesaid, personally appeared C. F. Chapman, who, having been duly sworn according to law, deposes and says that he is the Business Manager of MoToR BoatinG, and that the following is, to the best of his knowledge and belief a true statement of the ownership, management etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, International Magazine Co., 119 West 40th St., New York, N. Y.; Editor, C. F. Chapman, 119 West 40th St., New York, N. Y.; Managing Editor, C. F. Chapman, 119 West 40th St., New York, N. Y.; Business Manager, C. F. Chapman, 119 West 40th St., New York, N. Y.

2. That the owners are: International Magazine Co., 119 West 40th St., New York, N. Y. Stockholders: Star Holding Co., 119 West 40th St., New York, N. Y. (W. R. Hearst, 137 Riverside Drive, New York, N. Y., Sole Stockholder)

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other persons, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

C. F. CHAPMAN, Business Manager.

Sworn to and subscribed before me this 29th day of September, 1922.

K. J. MOORE,
Notary Public, New York County.

New York Co. Clerk's No. 343, New York Co. Register's No. 3144.

My commission expires March 30, 1923.

SPECIALLY SKILLED MECHANICS

Help make my BOND and GUARANTEE make good

My word is good
D. C. MacNeill

Look over this month's RED LIST of Re-Built Engine values. Your copy will go to you quick as we get your inquiry. You never saw bigger values.
Whatever your engine-needs, there is a motor on our list to meet that need absolutely. And it will be of the best make, since we handle nothing else.
Your old engine—we will buy it—goes a good way toward paying for a new or re-built one here. Prompt delivery, of course—our stock is so big.

EVERY machinist in our re-building shops is a specialist in Marine Engine efficiency. Our men have to be experts in this distinctive trade. The best automotive or stationary engine mechanic would never do for us.

You are safe, of course, because our Bond and Guarantee makes you dead sure of protection. But our staff of specialists makes you even more sure—of your engine running and running RIGHT. You don't want to have to fall back on the Bond—what you do want is an engine that's THERE. And you get it from us. Our Seal, on every motor that goes out of here, makes you sure.

D. C. MacNeill
Treasurer

AUTHORIZED DISTRIBUTORS

Hall-Scott
Automatic
Brennan
Wright Reliable
Scripps
Sturdy
Niagara
Gray (2 and 4 cyl.)
Universal 2-to-25 watt Electric Plants
Hyde and Sterling Propellers
Re-Built Engines—READY TO SHIP—Nearly every warranted make, from 2-h. p. up. No trash—if an engine isn't worth re-building, we junk it.

MARINE ENGINE CO

MACHINERY EXHIBIT of PHILADELPHIA BOURSE BUILDING

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Thomas D. Bowes, M. E.
NAVAL ARCHITECT AND ENGINEER
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YACHT BROKERS
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COX & STEVENS
Naval Architects and Engineers
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25 Broadway, Cunard Building
(Morris St. Entrance), New York City
Telephone 2700 Whitehall

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Naval Architect Yacht Broker
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Designer of Sailing Craft, Auxiliaries and Motor Boats. Specialist in V-Bottom Type.

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NEW BEDFORD, MASS.
HAND-V-BOTTOM DESIGNS
Every design, now as always, my personal work. Send stamp for catalog illustrating forty-three typical Hand-V-Bottom designs.

R. M. HADDOCK
NAVAL ARCHITECT
Sail or Power Yachts, Houseboats and Commercial Vessels
Yacht Broker Sales and Chartering
50 East 42nd St. New York City

CHARLES D. MOWER
Designer of
SENSIBLE CRUISERS
POWER—SAIL—AUXILIARY
Twenty-five years' practical experience
380 Madison Avenue New York City

FREDERIC S. NOCK
NAVAL ARCHITECT
Yacht Builder, Marine Railways, Storage and Repairs
East Greenwich, Rhode Island, U. S. A

Successful Correspondence Course Students

The names of all students who have submitted papers during the month of October are printed below:

Lesson No. 5: A. F. Alexander

Lesson No. 6 & 7: William Baumgart, A. E. Burgess, J. W. Lough, John Lang

Lesson No. 8: A. F. Alexander, William Baumgart, A. E. Burgess, J. L. Seagmuller, Roy E. Williams

Lesson No. 9: A. F. Alexander, William Baumgart, J. L. Seagmuller

Lesson o. 10: A. F. Alexander, William Baumgart, F. B. Watson

Lesson o. 12: C. M. Labunski

Lesson No. 13: Barbara F. Smith, Donald Spoor, Arthur E. Kumm, Louis A. Kumm, C. M. Labunski

The following have successsfully passed lessons in Dead Reckoning Course:

Lesson No. 2 Robert Cunningham, Edwin D. Kenyon

Lesson No. 3: L. L. Crosthwaite, Robert Cunningham, Edwin D. Kenyon, W. B. Moores, J. C. Morrell, Charles E. Stanton, Claude E. Wilson

Lesson No. 4: Michael Cibener, L. L. Crosthwaite, W. A. Cornell, Robert Cunningham, Albert J. Fenton, W. J. Mozart, W. B. Moores, Edmund Roxby, M. H. Renz, W. E. Roberts, Charles E. Stanton

Lesson No. 5: Ralph Christie, Michael Cibener, James V. Lawrence, W. J. Mozart, J. M. Main, Edmund Roxby, C. Custer Robinson, W. E. Roberts, David Schnitzer, Charles E. Stanton, Claude E. Wilson

Lesson No. 6: Ralph Christie, W. J. Mozart, Ian L. McKenzie, Edmund Roxby, W. E. Roberts, Fred'k. W. Salmon

Lesson No. 7: R. Andren, Ralph Christie, Ian L. McKenzie, L. P. O'Keefe, Edmund Roxby, Fred'k. E. Smith, E. T. Youngfeld, C. S. Young, Frank Zueger

The problem on Great Circle Sailing in the Dead Reckoning Course will be found this month on page 108.

New subscriptions to Motor Boating are entered as promptly as possible, but under certain conditions it may take four weeks for the first copy to reach the subscriber. Subscriptions should be renewed on or before the date the last copy of the old subscription is received in order to make sure the subscribers will not miss an issue. When sending a change of address, the old address must be given as well as the new, and five weeks must be allowed for the first copy to reach the new address.

RALPH E. WINSLOW
Naval Architect
River Street, ATLANTIC, MASS.
Designer of high grade wood and steel, Steam, Motor, Auxiliary and Sailing Yachts and Commercial Vessels.
18 years' experience. Stock plans.
Phone Granite, Mass., 1011 or 2500-M

The "HOUSE of WOOD"

FOR sixty-two years the HOUSE of WOOD has catered to the most discriminating yachtsmen and naval architects. Sail and power yachts of the finest quality.

An Old Yard with a New Business Policy

Superior workmanship at moderate prices.
Let us quote on your work

B. F. WOOD
Incorporated
Marine Street, City Island, New York City
Building Refitting Repairs Storage

Beetle "22"
Standardized Cruiser

Now comes the Beetle "22", smaller but like the popular Beetle 30 foo

The beetle "22" is designed to fill an expressed demand for a low priced cruiser of strength and character by a known builder, that can be easily transported. The Beetle "22" can be shipped on a railroad flat car from builder to owner.

Hull and War Tax $600.

With	12	H P.	Kermath	$1350
"	16	H P.	"	1400
"	20	H P.	"	1450

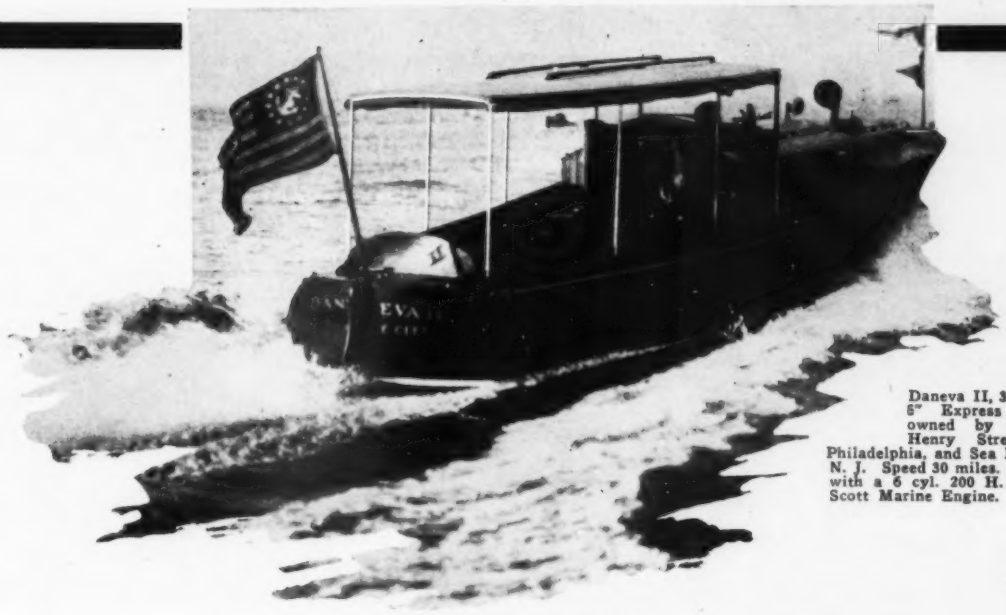
Self starter $150 extra

Send for catalog and price list.

Carl N. Beetle
New Bedford, Mass.

Advertising Index will be found on page 110

DANEVA II Cleans 'em up with her HALL-SCOTT motor



Daneva II, 38'6" X 8' 6" Express Cruiser owned by Mr. C. Henry Strecker of Philadelphia, and Sea Isle City, N. J. Speed 30 miles. Powered with a 6 cyl. 200 H. P. Hall-Scott Marine Engine.

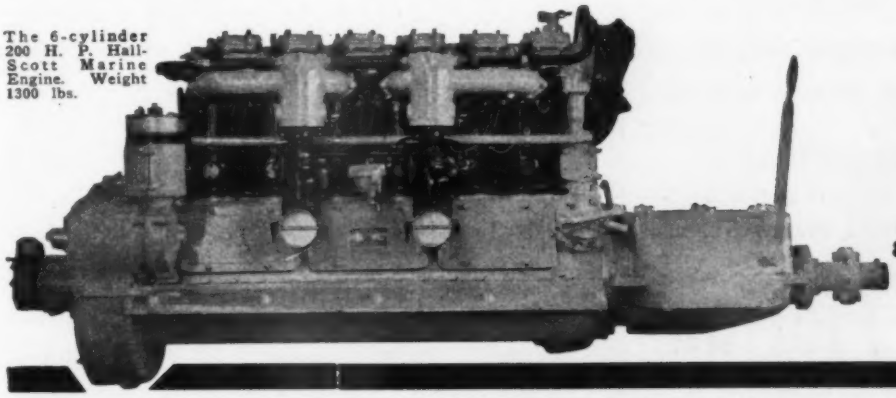
It was a great deal more than the usual satisfaction for Daneva II to win the Express Cruiser Championship of the Jersey Coast this year. For this boat had previously had three or four different engines in it—good ones too, but none of them brought her up to the speed of which Mr. Strecker felt sure she was capable.

So when the Marine Engine Company of Philadelphia suggested a 6 cylinder 200 H. P. Hall-Scott Marine Engine a few months ago, Mr. Strecker was willing to try again. And after six or eight weeks of increased speed, faultless service and victorious racing he was thoroughly satisfied that he had found the right engine for his boat.

If your boat isn't up to your expectations of speed and efficiency, consider replacing your motor with a Hall-Scott. Scores of other yachtsmen have tried it, with astounding results. Of course you'll save trouble if you get a Hall-Scott in the first place. But "better late than never".

Four Cylinder Hall-Scott Marine Engine 125 H. P. Weight 1100 lbs.
Six Cylinder Hall-Scott Marine Engine 200 H. P. Weight 1300 lbs.

The 6-cylinder 200 H. P. Hall-Scott Marine Engine. Weight 1300 lbs.



Single and Twin Screw Plants in stock at

Hall-Scott
Motor Car Co., Inc.

Eastern Sales and Service Branch
887 Niagara St. Buffalo, N.Y.

Factory: Berkeley, California.

Miami's Annual Motor Boat Regatta March 2 to 9
THE FLAMINGO
Miami Beach, Florida
Florida's Foremost Resort Hotel
Fireproof - 200 Rooms each with Bath
Opens December 29th.
Polo - Golf - Bathing - Tennis - Fishing
Unusually attractive furnished Bungalows
C. S. KROM Manager

Biscayne Yacht & Machine Works

Designers and Builders of Pleasure Craft

Largest Marine Ways in Miami

Material and Workmanship Guaranteed

Machine Shop. Marine Supplies. Repairing

Let us figure on that new boat to be Delivered this winter here in Miami Ready for a strenuous season

Miami, Florida

Frances, An 18 Foot Catboat

(*Continued from page* 33)

Durkee fig. 439, 4½-inch size placed on each side. Mainsheet traveller to be galvanized iron ½ inch diameter, 18 inches wide, high enough to clear tiller, bolted to inside of stern transom. To be made easily removable in case outboard motor is to be used.

Spars and Rigging: To be of clear Western spruce neatly made and finished with three coats of best spar varnish. Mast to be 28 feet 6 inches overall, 4 inches diameter at deck tapering to 2 inches at head as per sizes given on sail plan. To have brass sheave in head for main halyard. Fitted with ⅝-inch brass track for sail hoist, screwed to mast with round head brass screws. (Note: track and slides for sail can be obtained from Henry B. Nevins, Inc., City Island, N. Y. City, N. Y. or from Pigeon Hollow Spar Co., East Boston, Mass.) Oak shoulder cleats to be screwed to mast to support eye splices of standing rigging at height shown on sail plan. A tapered shim to be fitted under brass track to carry it over the rigging splices. Boom to be 16 feet long, 2½ inches diameter in middle and tapered to 1¾ inches at ends. Fitted with gooseneck similar to Durkee fig. 294-D or 295 as required by owner. Foot of sail to be laced around boom with cotton line. Head stay and side stays to be of ¼ inches diameter galvanized wire rope, neatly spliced and fitted to 3/8 inches diameter galvanized pipe turnbuckles. Durkee fig. 325-C or fig. 176 Merriman Brothers, Boston, Mass., bronze turnbuckles 7/16-inch size. Mainsheet blocks to be galvanized or brass as directed by owner. Halyard and mainsheet to be 3/8 inches diameter manila yacht rope.

Sail: To be of about 5 oz. cotton duck, fitted with one reef as per sail plan and with sail battens. Dimensions on sail plan are for size when stretched and sailmaker should make proper allowances for stretch. Hoist of sail to be fitted with brass clips to fit mask track, spaced about 18 inches apart. Waterproof mainsail cover to be furnished.

Equipment: One anchor of about 20 pounds with 100 feet of ¼ inches diameter manila cable. One brass bilge pump; one boat sponge; one oar or canoe paddle; two life preserver cushions; one boat hook; one fly for masthead.

Advertising Index will be found on page 130

MIAMI BEACH

Plan Now to Spend your Winter Vacation at Miami Beach.

THIS is the most favored spot in Florida, or all America in fact, for perfection of climate and everything that makes life enjoyable. Boating, fishing, bathing, golf, polo and tennis are in season every month of the year.

While Miami's hotels are unsurpassed the greatest pleasure is to build a permanent home at Miami Beach which you can enjoy season after season, or live here the year around if you wish.

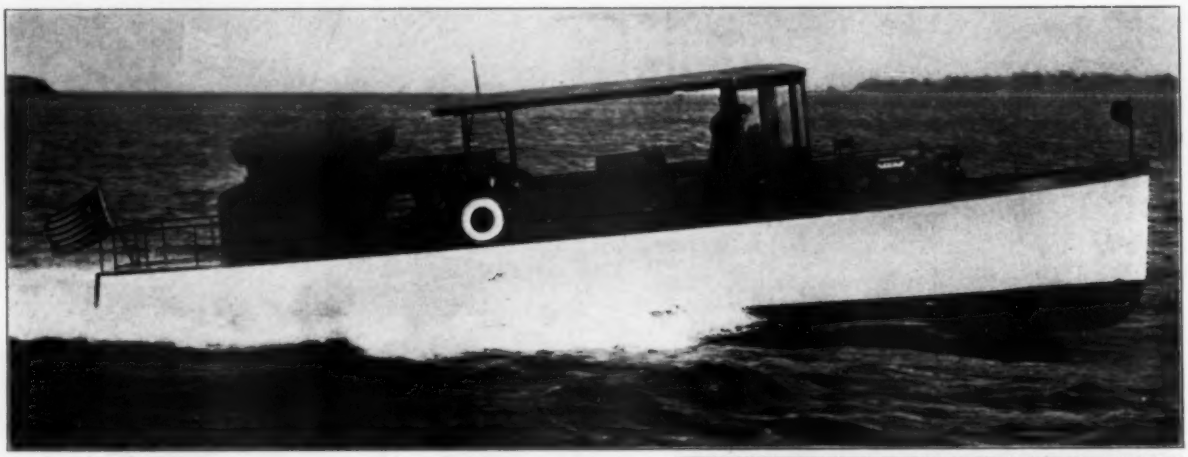
Let us tell you about Miami Beach, its climate, its surroundings and its homes.

Write for details today.

CARL G. FISHER, Miami Beach, Fla.

THE "Gar Jr. Flyer"

A New Standardized Guaranteed 30-Mile Commuter



High Speed—Seaworthy
Dependable—Low Cost
Economical Operation

NEW YORK	Foot of East Twenty Third Street	to GREENWICH	55 Minutes
		" GLEN COVE	44 "
		" PORT WASHINGTON	42 "
		" OYSTER BAY	55 "
		" LARCHMONT	40 "
		" GREAT NECK	26 "
		" SOUTHAMPTON	4 Hours

Prompt Delivery

Now Available for Thorough Demonstration

Built By:—GAR WOOD, DETROIT, MICH.
Exclusive Sales Agents:—COX & STEVENS, NEW YORK

A 50-ft. twin screw motor yacht with sustained high speed, free of vibration, and remarkable seagoing qualities (as demonstrated by GAR JR. II in various long distance ocean races).

The roomy bridge with four individual seats, also large thwartship seat directly aft of steersman. There is also a forward cockpit seating three persons and good-sized after deck.

The hull construction is of highest grade (double planking—outer skin of mahogany). Fittings and furnishings of the best.

Power plant consists of two twin-six "Liberty" motors developing 450 H.P. each, perfect in balance and control, absolutely reliable, and practically automatic in operation.

A trained engineer will be furnished with each boat, and a guarantee from the builder as to speed and handling qualities.

For price, plans and full particulars, apply to

COX & STEVENS — 25 Broadway, New York City

Telephone: WHITEHALL 2700

Advertising Index will be found on page 130

Baby Gar

First and Second Place
Fisher-Allison Trophy Race, Hamilton, Ont.
First and Second Place
Wood-Fisher Trophy Race, Detroit.
First Place
2200 cu. in. Displacement Boat Class, Buffalo.

Fastest and Most Famous Standardized Runabout Built

NOT only is Baby Gar the World's Fastest Standardized Runabout but several duplicates of the original Baby Gar showed the *versatility* of this design with different power plants by winning the most important races of the past season. They also showed its *safety* and *seaworthiness* by making high speeds in rough weather which forced other contestants out of the running.

However Baby Gar is not merely a racing creation but is a sensible, substantial and practical runabout for general use. Seating eight persons and as easy to control at any speed as a motor car on a concrete highway, this 33-ft. boat affords the wonderful exhilaration of high speed on the water without sacrificing safety, seaworthiness or practical serviceability.

Furnished complete, fully equipped and ready to run. Thoroughly guaranteed in workmanship, equipment and performance.

50 Miles Guaranteed
$8250 (Tax Paid)
Powered with a 450 H. P. Liberty Marine Motor. (1550 cu. in.) Speed gauranteed on 50 mile trial.

45 Miles Guaranteed
$7250 (Tax Paid)
Powered with Detroit Marine-Aero Engine (Fiat type), 300 H. P. (1350 cu. in.) Speed guaranteed on 50 mile trial.

Write today for full details and delivery dates. Attractive proposition for dealers.

Built by GAR WOOD, Inc.

Offices: 7960 Riopelle St., Detroit, Mich. Boat Building Plant, Algonac, Mich.

N. Y. Territory Representative and Service Station, Caleb Bragg, Port Washington, Long Island. Phone Port Washington 257

Chicago Territory Representative, Webb Jay, Standard Oil Bldg., Chicago, Ill.

Always Look For the Name ROBERT BOSCH and this TRADE MARK

Bosch

Satisfactory Service

at all times—under all conditions. The famous, *original*

Bosch

Magnetos and Spark Plugs

have no equal for Dependability and Economy. Your copies of new edition "Bosch Facts" and latest literature mailed on request.

Robert Bosch Magneto, Co., Inc.
Otto Heins, President

123 West 64th Street, New York

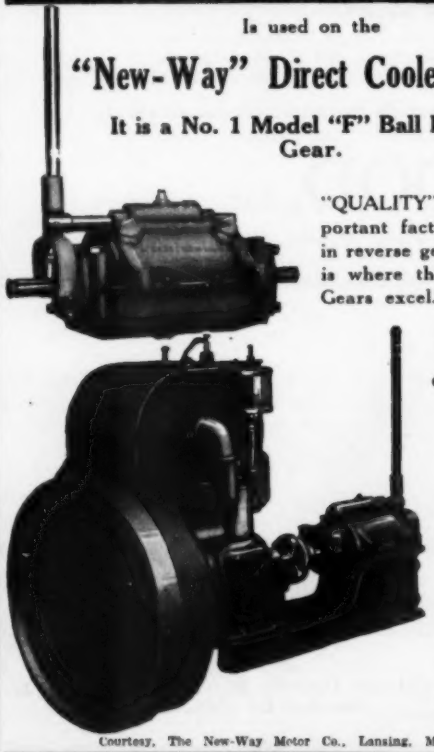
Several Hundred U. S. Service Stations—Representatives the World Over.

THE JOHNSON MARINE REVERSE GEAR

Is used on the

"New-Way" Direct Cooled Motor

It is a No. 1 Model "F" Ball Bearing Gear.



"QUALITY" is the important factor needed in reverse gears. Here is where the Johnson Gears excel.

Write Department 25 for Our Catalog

Made in Six Sizes From 1-100 H. P.

Price is Very Low for Quality Given

Courtesy, The New-Way Motor Co., Lansing, Mich.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

A. P. B. A. Holds Its Annual Meeting

(*Continued from page 37*)

7. National trophy, for boats no less than twenty-six feet, piston displacement not more than 1,100 cubic inches, three races twenty to forty nautical mils each.

8. Motor Yacht trophy, for express cruisers not less than forty-five feet length, three races twenty to forty nautical miles each.

9. Interstate trophy, for boats not less than twenty-five feet, piston displacement not more than 625 cubic inches, three races twenty to forty nautical miles each.

The development of the superior type of boat and engines which have been brought out in recent years, as a direct result of the competition induced by the rules of the Association was clearly shown in the report of the Racing Commission, through its Secretary, Charles F. Chapman. Suitable engines have been developed for these races, which are far in advance of the ordinary type engines being used generally. There has been little development in hydroplane racing, since the Harmsworth trophy which is still held by Commodore Gar Wood, was not competed for this year. Cruiser racing has also fallen off to some extent, possibly due to the lack of new construction. The displacement runabout has offered the greatest progress and development.

Most popular, have been the races in limited piston displacement classes and the indications point to a continued interest in this type of competition. Remarkable speeds have been made in competition and the table of runabout records published on page 43 clearly shows the progress in this direction.

For the coming year, keen competition is expected in the 625 cubic inch class. A race will be held at Bermuda for boats of this class and British sportsmen are expected to have suitable boats there also. This should prove a particularly attractive race since the government at Bermuda has undertaken to defray the expenses of bringing boats there for these events. As usual there will be races at Florida and the Long Distance race to Havana, Cuba for which valuable trophies are being offered. The new Sweep Stakes race at Detroit for $25,000 in prizes will probably attract the largest numbers of entrants which have ever competed in any Regatta anywhere.

An important accomplishment of the past year was the adoption by the several racing associations in the country of a uniform system of boat numbering for competitions. This feature was inaugurated by this Association and the coöperation of the others has resulted in greatly simplifying the work of Race Committees and contestants alike.

The rules for the Gold Cup races, having been found to be uniformly satisfactory, will be left as they are for the races to be held during 1923 and 1924. The only suggestions adopted were, that it will be permissable for the Race Committees in charge of this race to conduct a drawing for position of the contestants at the start of each day's racing. Another suggestion was that the feature of displaying any advertising matter of any nature on the sides of competing boats, be prohibited. Both of these suggestions were adopted and the rules will be so revised as to incorporate them.

Due to the uncertainty as to just what a marine motor is, a resolution was adopted which declared the sense of this meeting to be that, in all future races for the Fisher-Allison trophy the definition of a marine motor shall be, "An internal combustion engine, manufactured, assembled, advertised, and offered for sale as a marine engine."

After further routine business had been transacted, a nominating committee was appointed who reported back promptly. The election of officers then took place and the new officers for 1923 are: President, Commodore A. L. Judson; Secretary, W. D. Edenburn; Treasurer, A. J. Utz; Measurer, F. R. Still; Timer, Harry Sampson, Jr. and Surveyor, F. W. Horenburger.

COMMODORE Gar Wood, international and former national motor boat champion, has decided to participate in the Pacific Coast speed boat competitions for the first time. He will race at Los Angeles the latter part of December or early in January. Commodore Wood is overhauling Miss America I, now holder of the speed mark of 74.87 miles an hour, and installing new power plants before shipping his hydroplane to Los Angeles the middle of the month. He will also take a larger hydroplane to the Pacific Coast but has not announced the specifications or disclosed her name. The latter boat is preparing for the Catalina Trophy race, which is an event in the open sea, said to be run in rougher water than the Harmsworth course, at Cowes, Isle of Wight. Commodore Wood has agreed to remain in Los Angeles until Jan. 10, when he must leave for Hamilton, Bermuda, to engage in the international races there for the Gold Cup type of runabout, scheduled for Jan. 24, 25 and 26.

Advertising Index will be found on page 130

VOL. 36 NO. 6 DECEMBER

GIELOW BOATS of 1922

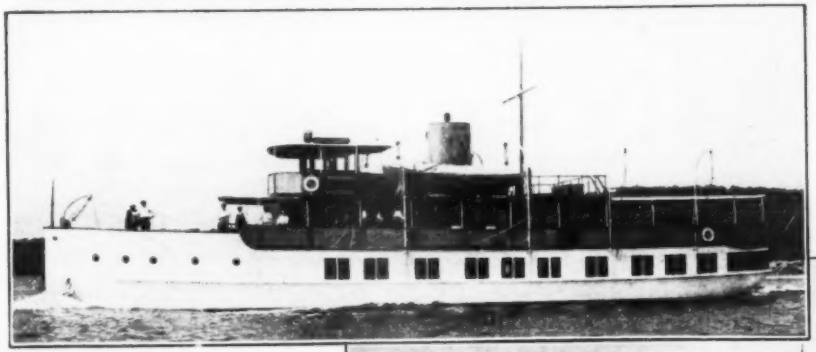
Designs of

Henry J. Gielow Inc.

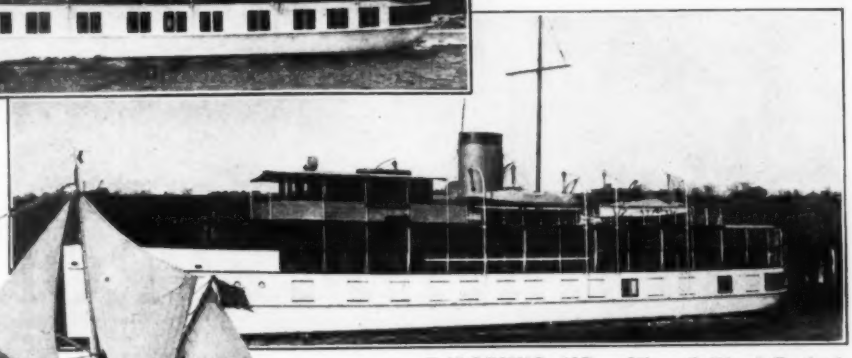
25 West 43rd Street,

New York, N. Y.

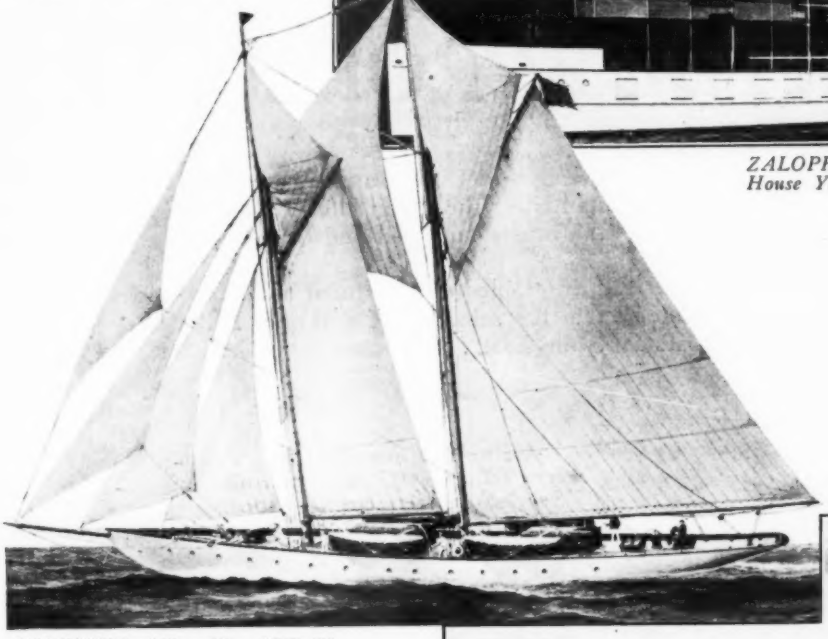
Telephone: Murray Hill 9134



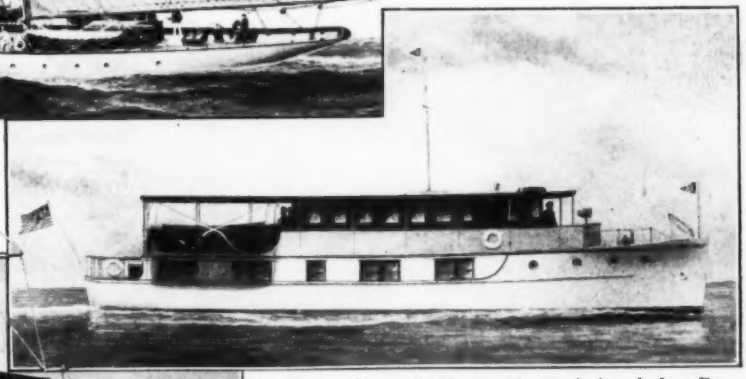
MIRAMAR, 101' x 21' x 4' Diesel Engined House Yacht, designed for the late Louis H. Eisenlohr of Philadelphia.



ZALOPHUS, 125' x 21' x 4' Diesel Engined House Yacht, designed for John Ringling of New York.

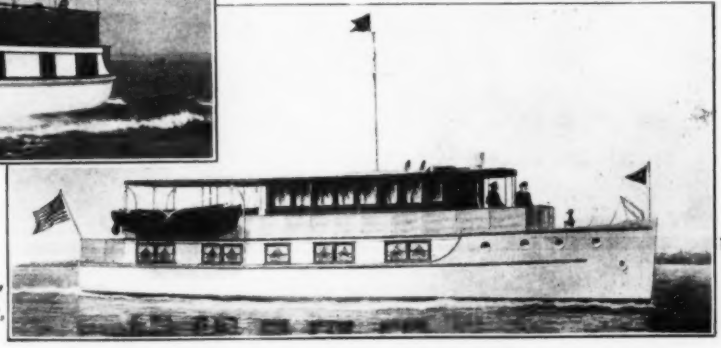


GOODWILL, 161' x 30' x 15'3" Diesel Auxiliary Schooner, Yacht designed for Keith Spalding of Chicago and Pasadena, Cal.



75' x 17' x 4' House Yacht designed for Dr. Herman B. Baruch of New York.

DOMINO, 50' x 14' 6" x 3' Houseboat designed for A. G. Southworth of New York.



VOYAGEUR, 68' x 16' 6" x 3' 6" Houseboat, designed for Geo. Mercer, Jr., of New York.

NAVAL ARCHITECTS GIELOW YACHT BROKERS

Mr. Henry J. Gielow is acknowledged as one of the world's foremost designers of yachts of the highest class. Every item entering into the construction of boats from his board, from the hull itself to the last portion of equipment, is selected with the utmost care. Years of experience have placed Mr. Gielow in position to know that the satisfactory performance of his boats depends, not only on the excellence of their hull lines, but on other factors as well. One of the most important of these factors is the propeller. To obtain the estimated speed, the propeller must be correctly designed, made of the highest grade material and carefully balanced and finished.

The fact that

HYDE PROPELLERS

are specified by Mr. Gielow on all boats of his design substantiates our claim that HYDE wheels produce the utmost in speed and efficiency.

Let the experience of such men as Mr. Gielow guide you in the selection of a HYDE PROPELLER for your boat.

Write for our booklet "Propeller Efficiency" and consult our Service Department for specialized advice covering the correct propeller for your individual installation. All information is furnished without charge or any obligation on your part. We will consider it a privilege to assist you in obtaining the best possible results from your boat.

HYDE WINDLASS COMPANY

Dept. B, Bath, Maine. U. S. A.

The 68 ft. Auxiliary Schooner "Nirvana" designed by H. J. Gielow, Inc. for H. Struckmann has a HYDE PROPELLER

NAVAL ARCHITECTS GIELOW YACHT BROKERS

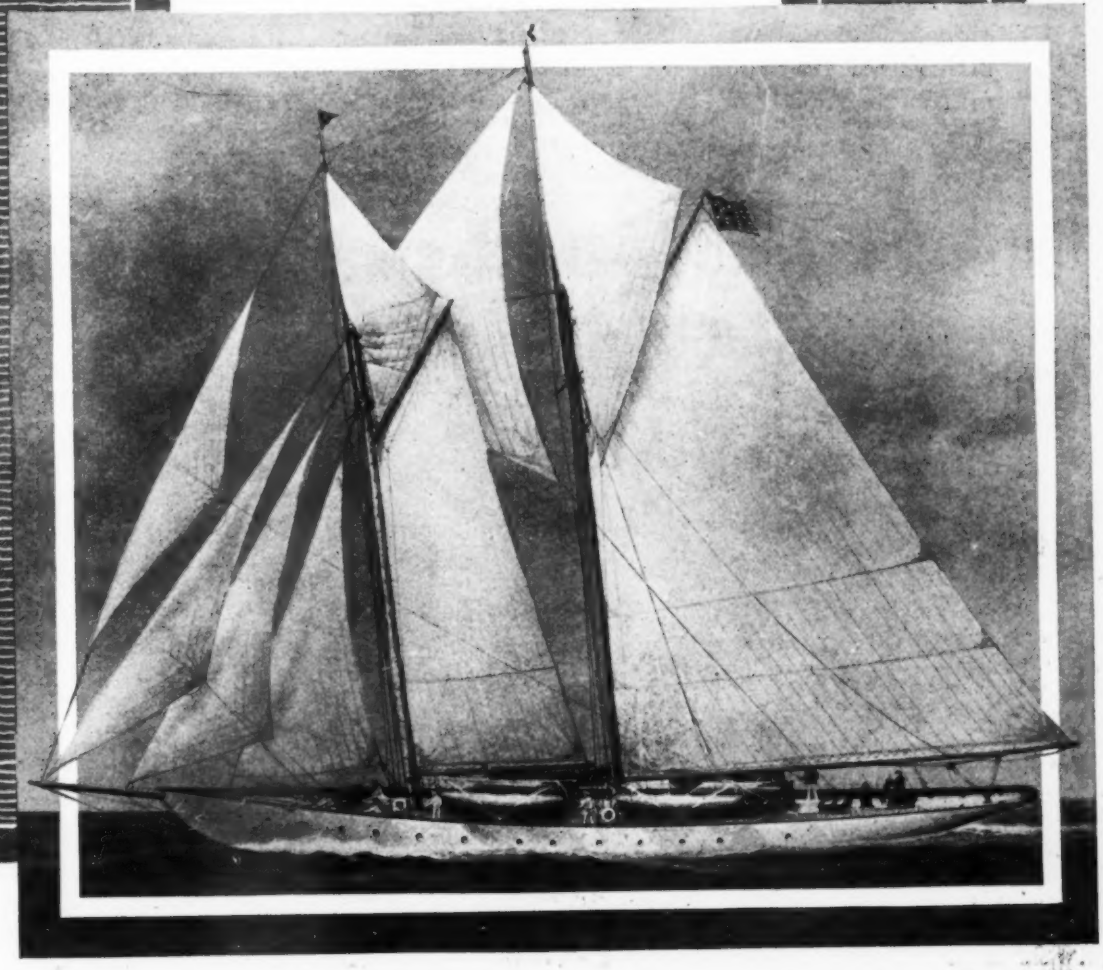
NELSECO

Schooner Yacht "GOODWILL"

The 161 ft. auxiliary schooner yacht "GOODWILL" designed by Henry J. Gielow, Inc., for Mr. Keith Spalding of Chicago, is powered by a 180 B. H. P. NELSECO MARINE DIESEL ENGINE

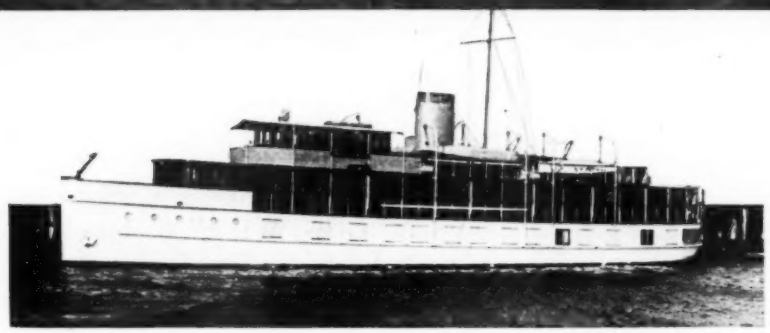
THE NEW LONDON SHIP & ENGINE COMPANY

GROTON, CONN.



NAVAL ARCHITECTS GIELOW YACHT BROKERS

NELSECO DIESEL

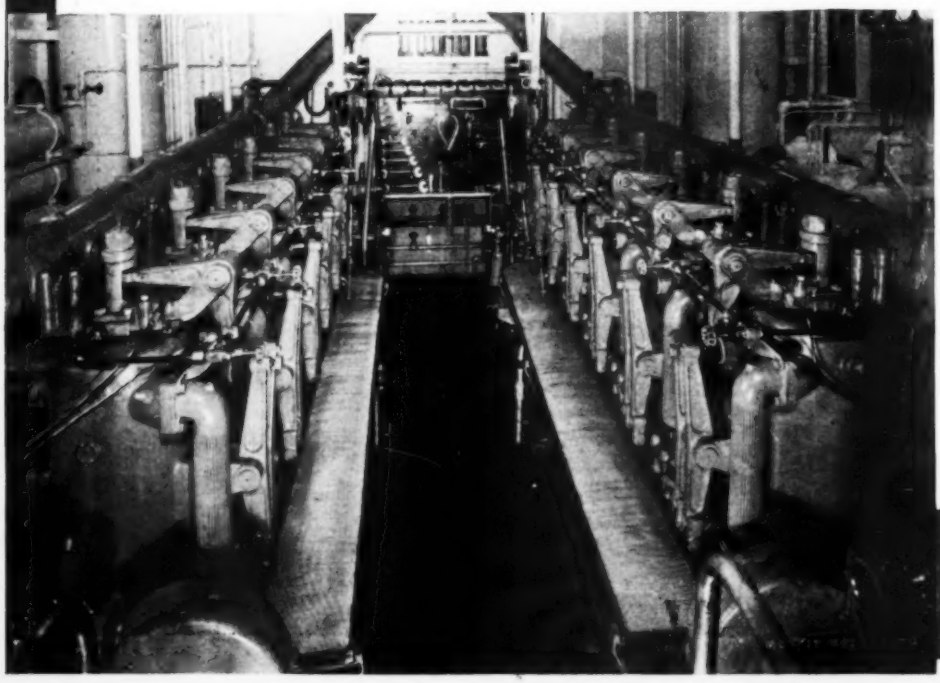


The 125 ft. steel houseyacht "ZALOPHUS", designed by Henry J. Gielow, Inc., for Mr. John Ringling of New York. Powered by two six cylinder 180 B. H. P. NELSECO MARINE DIESEL ENGINES.

THE suitability of the NELSECO DIESEL engine as a power plant for motor yachts and houseboats is proved by the installation of five NELSECO engines in Gielow designed boats during 1922. GOODWILL, ZALOPHUS and MIRAMAR are insured the economy and reliability of operation characteristic of NELSECO DIESELS, America's first Marine Diesel engines.

Detailed records of Diesel operating costs are convincing. NELSECO DIESELS afford the ideal power plants for yachts, houseboats and auxiliaries from 80 ft. up.

THE NEW LONDON SHIP AND ENGINE COMPANY

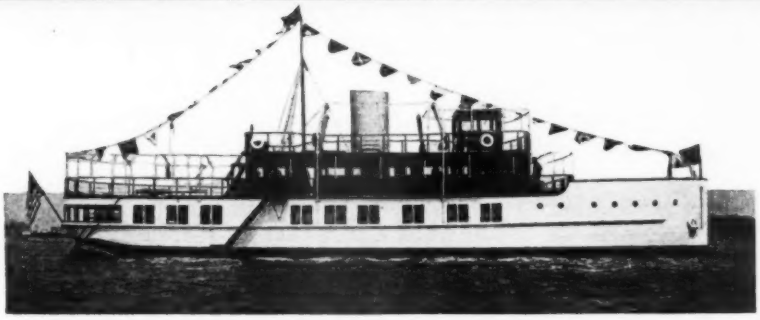


The engine room of ZALOPHUS, showing the two six-cylinder 180 B. H. P. NELSECO DIESEL engines.

NAVAL ARCHITECTS GIELOW YACHT BROKERS

ENGINES

NELSECO



The 101 ft. houseyacht "MIRAMAR", designed by Henry J. Gielow, Inc., for the late Louis H. Eisenlohr of Philadelphia. Powered by two four-cylinder 120 B. H. P. NELSECO MARINE DIESEL ENGINES.

The advantages in efficiency and feul economy of Diesel engines, as compared with steam and gasoline power plants, is shown by the thermal efficiency, or percentage of heat energy derived from the fuel used and converted into useful work. The thermal efficiency of a Diesel is 33 per cent.; of a steam engine, 13 per cent.; of a gasoline engine, 24 per cent. The fuel cost of a Diesel is about *one-third* that of a steam engine and *one-tenth* that of a gasoline engine.

Equally important advantages of Diesel engines over steam are the cleanliness, compactness, and economy of bunker space, with consequent increase of cruising range before refueling. For these reasons many steam yachts are being repowered with Diesel engines.

Write today for latest bulletin and prices.

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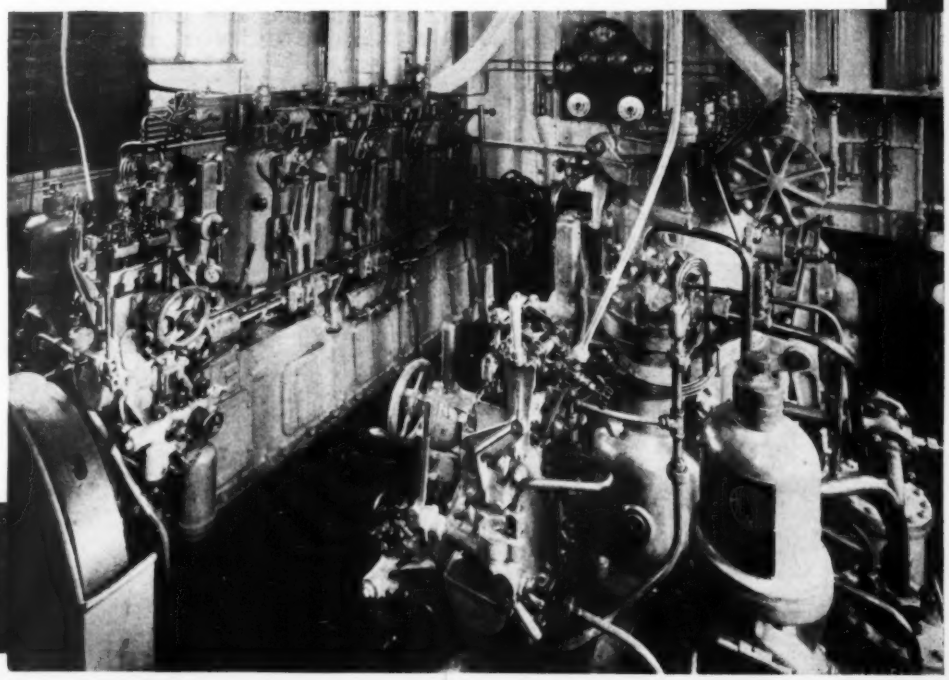
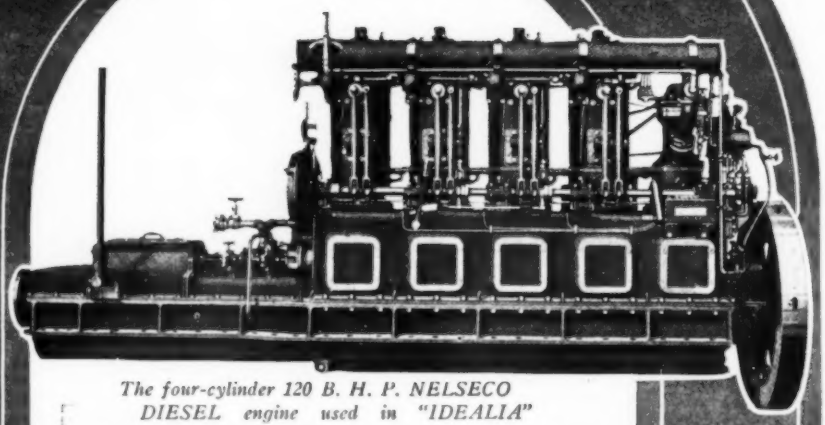


The engine room of MIRAMAR, showing the two four-cylinder 120 B. H. P. NELSECO DIESEL engines.

NAVAL ARCHITECTS GIELOW YACHT BROKERS

AMERICA'S FIRST DIESEL YACHT

"IDEALIA"



The four-cylinder 120 B. H. P. NELSECO DIESEL engine used in "IDEALIA"

IDEALIA has the distinction of being the first Diesel engined yacht in America, the fore-runner of a combination of boat and power plant which is becoming increasingly popular, and promises still greater things for the future.

The four-cylinder 120 B. H. P. NELSECO Marine Diesel drives this 84′ X 14′ X 3′ yacht at a speed of 14¼ miles, using only six gallons of fuel oil per hour. The fuel cost per hour or per mile is approximately *one-tenth* the cost of operating a gasoline engined boat. Many cruises have demonstrated the thorough success of this boat.

NELSECO DIESELS are built in sizes from 120 B. H. P. to 3400 I. H. P. Our engineering staff will take pleasure in giving special attention to your power plant requirements upon receipt of data giving size and type of boat and speed desired.

Write today for complete information.

THE NEW LONDON SHIP AND ENGINE COMPANY
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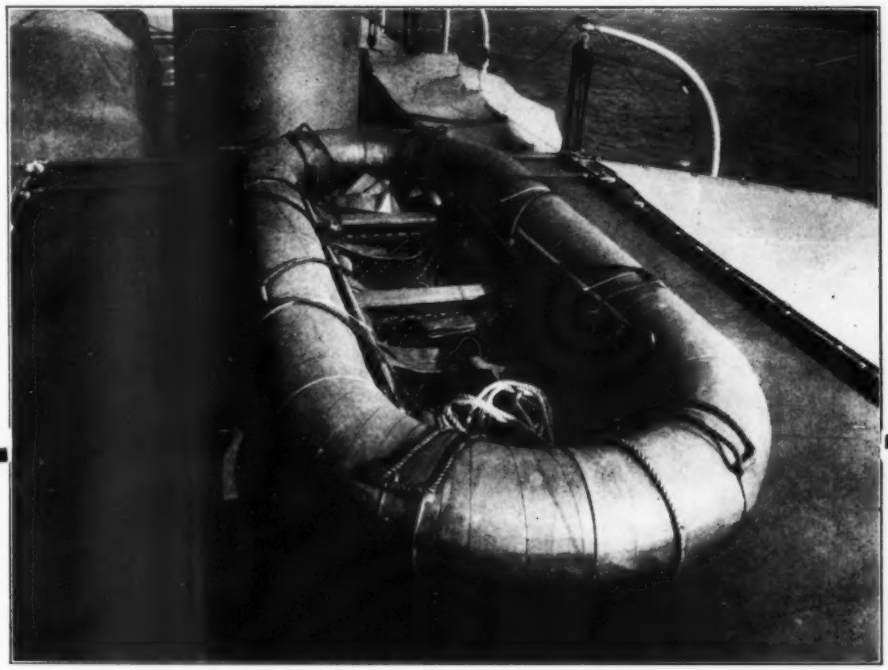
NAVAL ARCHITECTS GIELOW YACHT BROKERS

BALSA Life Floats



Deck View, Houseboat "Zalophus" showing American Balsa Company Life Float, specified by H. J. Gielow, Inc. Capacity 15 persons. A similar Balsa Float was specified by Gielow for the houseboat "Miramar".

There is no question about the preferred life saving equipment for motor yachts. Uncle Sam answered the question by installing hundreds of Balsa Life Floats on our Army transports during the war. Big shipping owners have answered it by providing Balsa Floats for practically all coastwise steamships. Naval architects have adopted Balsa Life Floats for all types of motor craft. American Balsa Life Floats are produced by experts in life-saving equipment. No company has had more complete experience than the American Balsa Company in building life-boats, life floats and similar equipment.

22 ft. steel lifeboat built by American Balsa Company to meet U. S. Steamboat Inspection requirements for Mr. Keith Spalding's 161 ft. Diesel Auxiliary Schooner Yacht "GOODWILL". Capacity 21 persons. Gunwales and interior finished in teak.

Big factories, complete facilities and ample financial backing have enabled this company to devote unlimited time and study to the development and building of life saving equipment which meets all Government regulations and all service requirements.

If our regular line does not include just the type of boat or life float you require, we will be glad to quote on your specifications.

Write today for catalog

AMERICAN BALSA COMPANY INC.,

Welin Marine Dept. Phone: Hunters Point 3781

305 Vernon Ave., Long Island City, New York, N.Y.

NAVAL ARCHITECTS GIELOW YACHT BROKERS

A. E. Co.

DECK MACHINERY

FROM BATTLESHIP
TO MOTOR BOAT

AND EVERYTHING BETWEEN

BUILDERS of the PROPER KIND

for the rugged Service and heavy duty of the largest ships afloat—for the hard usage and faithful response required on commercial vessels

AND

FOR THE DEPENDABLE SERVICE COMBINED WITH SIGHTLINESS, FIT FOR ANY PLEASURE CRAFT.

MR. H. J. GIELOW Selected

AMERICAN ENGINEERING COMPANY
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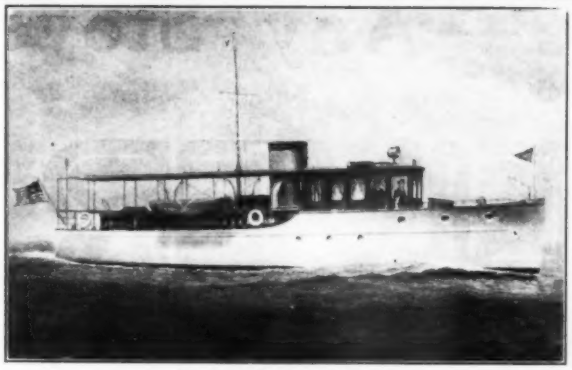
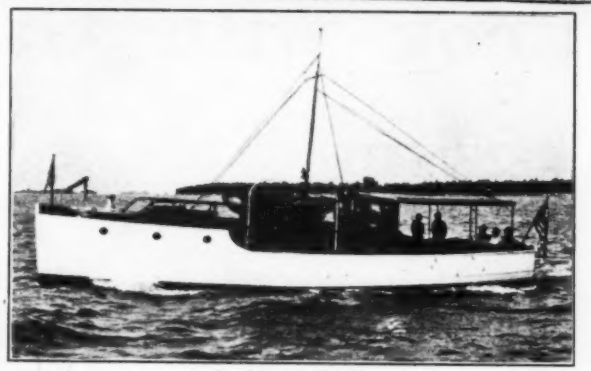
AUXILIARIES
for the

"MIRAMAR"
"GOODWILL"
"ZALOPHUS"

NAVAL ARCHITECTS GIELOW YACHT BROKERS



65 ft. Motor Yacht
T. B. Van Dorn, Owner
Built 1922 by The Matthews Co.



47 ft. Motor Cruiser
A. R. Southworth, Owner
Built 1922 by The Matthews Co.

ASK ANY OWNER

MATTHEWS CRAFT

Gielow Designed

The quality of Matthews workmanship and the completeness of Matthews facilities for the production of fine motor yachts are known the country over. Nevertheless we are gratified that Henry J. Gielow, Inc., entrusted to our care the building of several large boats during 1922. This simply confirms a standing already firmly established.

A 65 ft. motor yacht for Mr. T. B. Van Dorn and the 47 ft. cruiser Tonkawe for Mr. A. R. Southworth are the latest additions to the fleet of Matthews boats, Gielow designed. These craft recall two famous 90 ft. yachts, the Sachem and Tramp II, which were products of the same combination of builder and designer.

Many famous yachts have been launched in this yard. We are prepared to build any type of boat from 40 ft. to 140 ft. Matthews boats are also furnished in two popular stock designs of semi-house-boat cruisers, of 54 ft. and 65 ft. length. Prices on request.

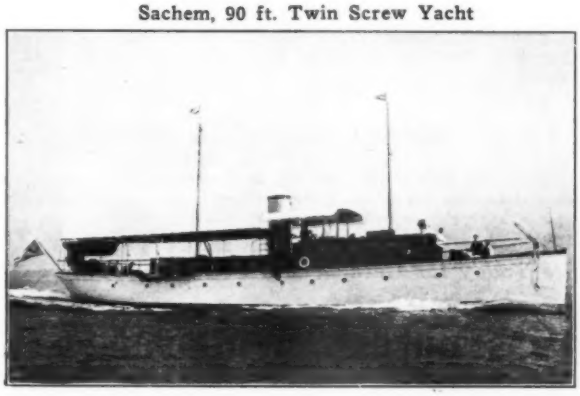
Let us quote from your plans.

THE MATTHEWS CO., PORT CLINTON, OHIO

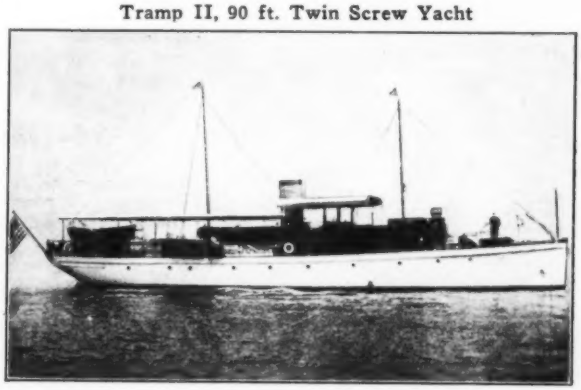
Established In 1892

We have specialized in fine yacht construction for over 30 years and have more than 1000 satisfied owners.

Sachem, 90 ft. Twin Screw Yacht



Tramp II, 90 ft. Twin Screw Yacht



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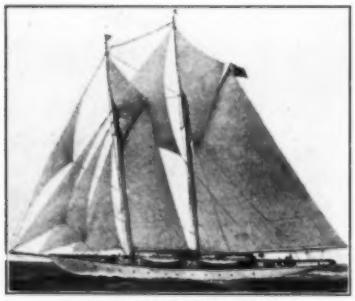
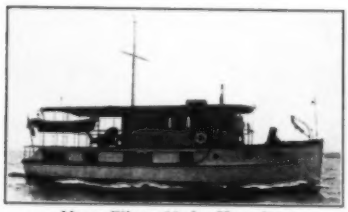
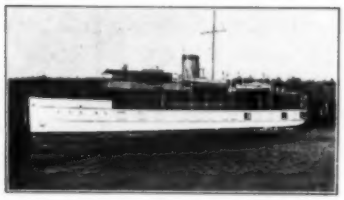
Cook with Gas—Any Stove



Goodwill, 161 ft. Diesel Yacht
Keith Spalding, Owner

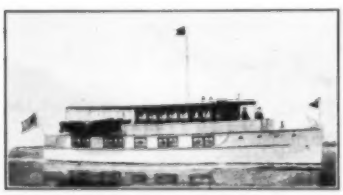


Mary Ellen, 50 ft. Houseboat
J. Curtiss McKallip, Owner

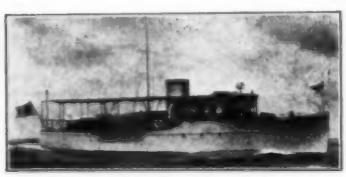


Zalophus, 125 ft. Houseboat
John Ringling, Owner.

Miramar, 101 ft. Houseboat
Louis Eisenlohr, Owner.



Voyageur, 68 ft. Houseboat
Geo. Mercer, Jr. Owner.



65 ft. Motor Yacht
T. B. Van Dorn, Owner

OLIVER

OIL-GAS BURNER

Made for All Sizes and Types of Coal and Wood Stoves

You can convert your coal or wood stove into a highly satisfactory oil-gas stove by installing the Oliver Burner. It makes its own gas from kerosene (coal oil) and gives you all the heat you want instantly, by simply turning a valve.

The efficiency and value of this Burner for yacht use is proved by its growing popularity on fine boats. Henry J. Gielow Incorporated specified the Oliver Oil-Gas Burner on several of the most prominent boats built under their supervision this year. A notable list of motor yachts, houseboats and cruisers now have Oliver-equipped galley stoves and heaters, including all the Gielow designed boats shown on this page.

The Oliver Burner is a complete unit which you merely set on the grates of your coal or wood stove. Made for all sizes, you can use it with any stove, old or new. It lasts a lifetime as it is substantially made and there is nothing to wear or burn out. Absolutely safe. Used on hundreds of boats and in thousands of homes for years.

The Oliver gives you the unparalleled convenience of gas for cooking or heating. It gives you the economy of kerosene fuel which is sold everywhere, is easy and safe to carry and requires little storage space. It insures a clean, cool and comfortable galley, free from smoke and odor, a pleasant place to work.

30-Day Trial—Money Back Guarantee

This Burner will sell itself to you if you will give it a trial in your own boat. To prove this to your own satisfaction we take all the risk and offer to return your money in full if you want it back at the end of 30 Days Trial.

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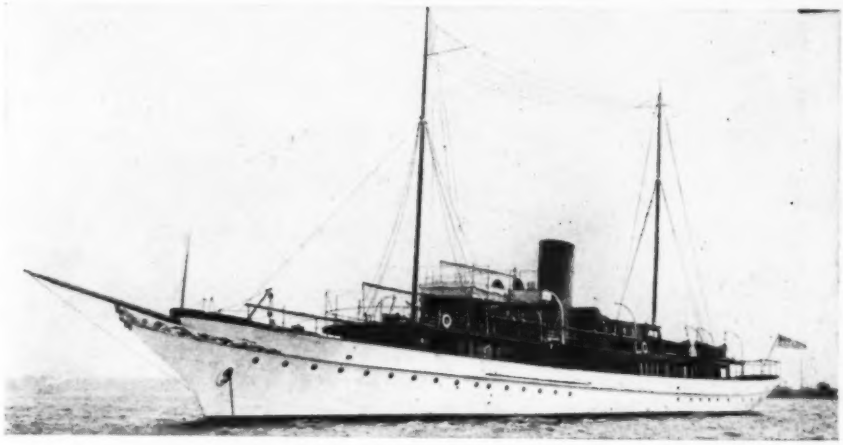
Oliver Oil-Gas Burner & Machine Co.

2413-L Oliver Bldg., St. Louis, Mo., U.S.A.

NAVAL ARCHITECTS GIELOW YACHT BROKERS

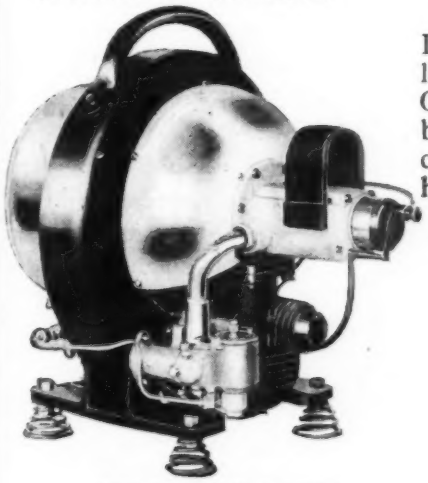
Steam Yacht "NOKOMIS II" 243 ft. x 32 ft. x 12 ft. 6 in. Designed by H. J. Gielow for the late Horace E. Dodge, taken over by the government during the war and now used by the Governor of Santo Domingo



Smith-Meeker Engineering Service

covers every detail of marine electrical engineering, installation and equipment for motor boats, yachts and larger vessels.

Mr. Gielow's "NOKOMIS II", "United States" "Hussar III" and other famous yachts are examples of the complete Smith-Meeker service. In these cases we provided the entire electrical equipment, furnishing and installing the generators, batteries, annunciator system, telephones, switchboard and auxiliary apparatus. Smith-Meeker service is constantly employed by the leading naval architects and boat builders. We supplied electrical equipment for practically all the Gielow boats featured in this issue.



Homelite ½ K.W. Generator

Homelite is the smallest complete generating set made. Designed particularly for cruisers of 30 ft. to 50 ft., and for larger day boats and auxiliaries requiring up to 20 lights. Occupies only 1½ cubic feet of space; weighs 100 lbs. without batteries, 190 lbs. including batteries. Self contained single cylinder air cooled motor, 1450 R. P. M. Gives 2,000 watt hours on one gallon of gasoline.

Let us estimate on your requirements. Remember, we sell expert electrical service, not merely electrical equipment.

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Searchlights, Fixtures, Switchboards, Marine Equipment of all Kinds.

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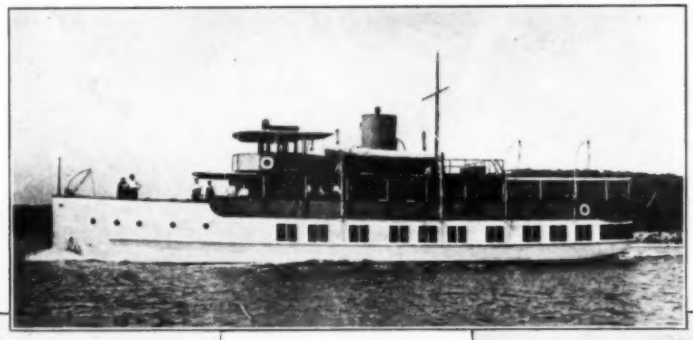
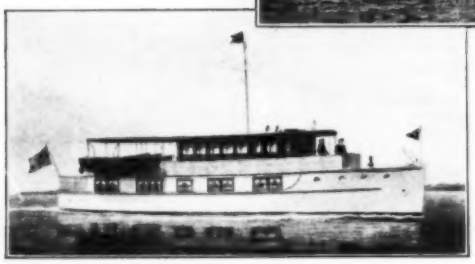
NAVAL ARCHITECTS GIELOW YACHT BROKERS

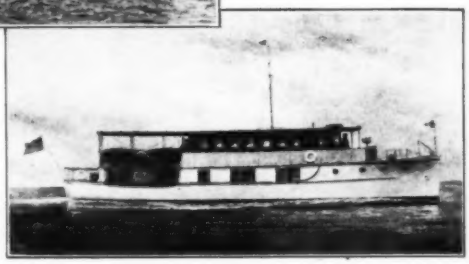




Above.—101 ft. Houseboat MIRAMAR. Tender powered with Universal Motor.

Left.—68 ft. Houseboat VOYAGEUR. Universal 4 KW Generating Set. Tender powered with Universal Motor.

Right.—75 ft. Houseboat for Dr. H. B. Baruch. Universal Generating Set and Universal powered tender.

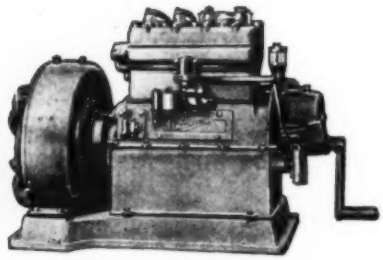


Universal of course!

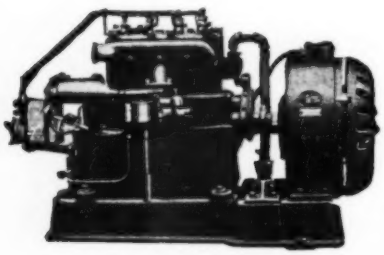
Although the 9-12 H.P. Universal Marine Motor meets the power requirements of 80% of all the motor boats built, one of its most popular uses is in the power tenders of fine motor yachts and houseboats. For this is decidedly a high grade power plant, suited to accompany the highest type of yacht construction.

Universal is first and foremost among marine power plants of its size. A four cylinder four cycle unit plant that gives the smoothness, flexibility and all around satisfaction you can find only in a four cylinder engine.

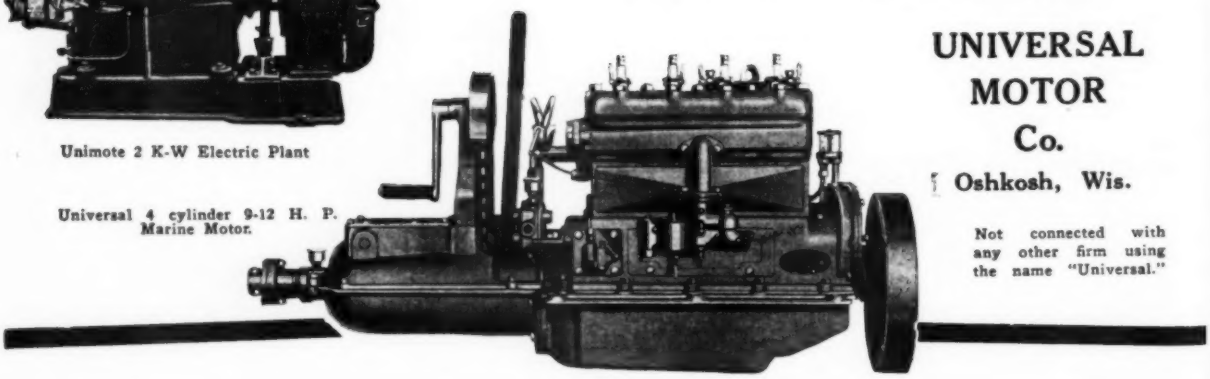
Universal Generating Sets provide the ideal lighting equipment for yachts and houseboats. Their use by the leading architects and boat builders is sufficient proof of their quality. 2 K W and 4 K W plants.



Universal 4 K-W Generating Set



Unimote 2 K-W Electric Plant



Universal 4 cylinder 9-12 H. P. Marine Motor.

LET US SEND YOU THE UNIVERSAL CATALOG AND PRICES. TELL US YOUR REQUIREMENTS.

UNIVERSAL MOTOR Co.

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Not connected with any other firm using the name "Universal."

NAVAL ARCHITECTS GIELOW YACHT BROKERS

TIEBOUT'S

LOCKS AND LATCHES FOR DOORS AND HATCHES

Co-operation

We appreciate the confidence shown in us by Henry J. Gielow, Inc., Naval Architects and Engineers, in specifying Tiebout Hardware for the impressive list of vessels built for them this year, from 20′ tenders to 161′ auxiliary schooners.

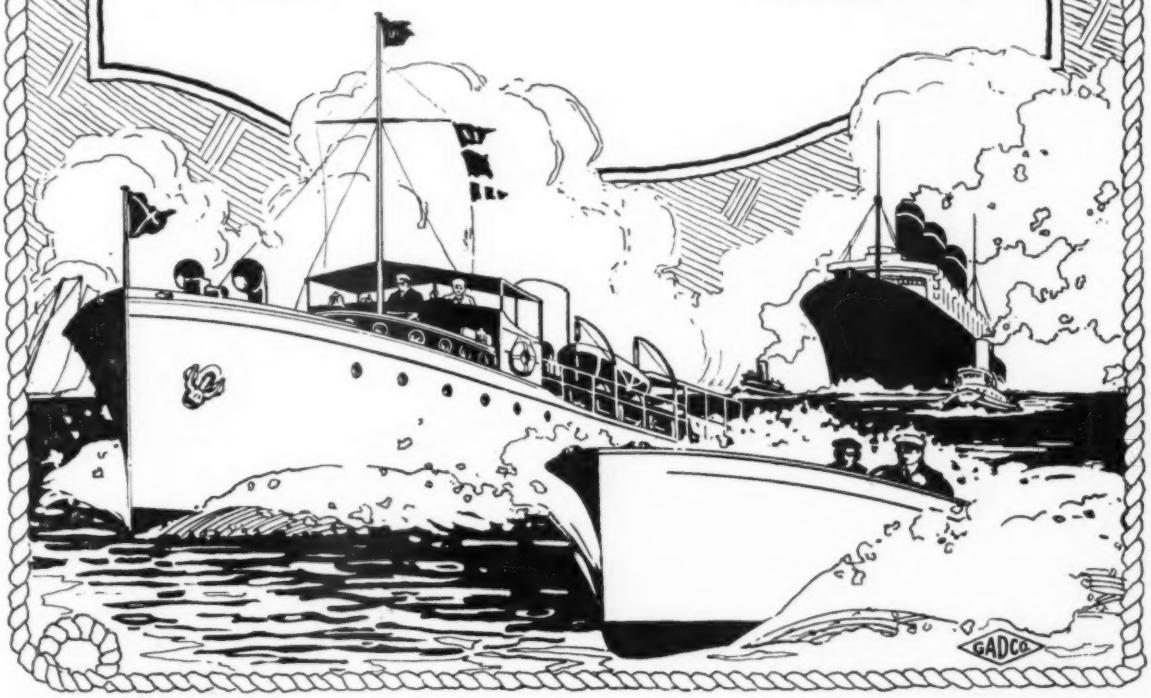
Naval Architects and Boat Builders will find in the Tiebout stock more items necessary in building, outfitting or re-conditioning boats than can be found anywhere else.

We consider it a privelege to co-operate with Naval Architects and Builders in selecting suitable Hardware and Fittings for craft designed and built by them.

Established 1853. *Incorporated 1892.*

W. & J. TIEBOUT

118 Chambers St. **New York, U. S. A.**



NAVAL ARCHITECTS GIELOW YACHT BROKERS

Schooner Yacht "GOODWILL"

Keith Spalding, Owner
Completely equipped with the

"SMITHSON SAFETY PORTHOLE"

THE Owner and his guests will appreciate not alone the absolute WATER TIGHT feature of the "Smithson Patented Safety Porthole" but the SIMPLICITY, SPEED and EASE of its operation.

One motion unlocks and opens the port and when open it can be closed and made watertight in one second's time by any member of party without assistance.

Mechanically perfect, having no tumble bolts, nuts, serial gears or pinions to jam, wedge, stick or get out of order.

Manufactured of high quality metal and as dependable as the hull to which it is attached.

Furnished in all sizes and to specifications.

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"Corsair"	-	Mr. J. Pierpont Morgan
"Analgia"	-	Mr. Louis E. Pierson
"Elsie II"	-	Mr. Frank B. Bower
"Ida"	-	Mr. Victor A. Searles
"Momus"	-	Southern Pacific Steamship Co.

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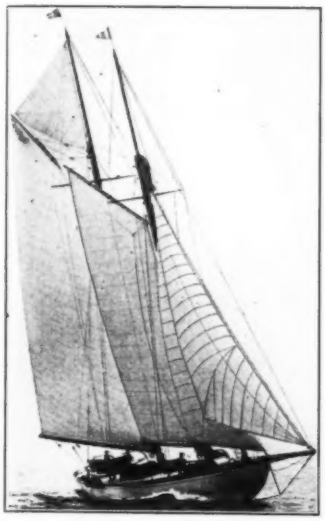
Smithson Patented Safety Portholes
Smithson Fuel Economizer
Smithson Lug-Type Air Ports
Keesey Mechanical Ship's Telegraph
Keesey Signal Pulls
Keesey Ship Bells and Gongs
White's Patented Pocketless Ship's Windows

NAVAL ARCHITECTS GIELOW YACHT BROKERS



The 68 ft. Auxiliary Schooner "NIRVANA"

The 32-37 h. p. STANDARD installation in Mr. Struckmann's new 68 Schooner Yacht "Nirvana" guarantees to him *the perfect motor boating of a STANDARD owner.*

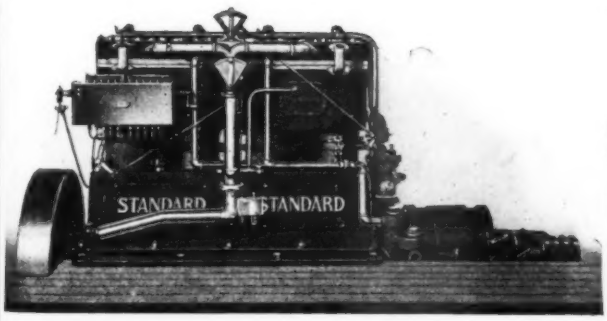
It yields to him the satisfaction of ownership of the best.

It affords him the enjoyment of that developed efficiency, unequalled economy and unapproached *security* of STANDARD operation.

It affords him the satisfaction of sound investment, negotiable at his will.

The superiority of STANDARD engined Gielow-designed boats is evidenced by their number and prominence.

The latest Gielow designed boats powered with STANDARD engines include:



The 32-37 h.p. Standard Motor—on the finest boats from Maine to Florida.

Nirvana ..... Mr. H. Struckmann
68 ft. Auxiliary Schooner. 4 cyl. 32-37 h.p. STANDARD engine.

Voyageur ..... Mr. Geo. Mercer, Jr.
68 ft. Houseboat. 6 cyl. 70-90 h. p. STANDARD engine.

65 ft. Motor Yacht ..... Mr. T. B. Van Dorn
Two 4 cyl. 50-60 h. p. STANDARD engines.

Mary Ellen ..... Mr. J. Curtiss McKallip
50 ft. Houseboat. 4 cyl. 50-60 h. p. STANDARD engine.

Tonkawe ..... Mr. A. R. Southworth
47 ft. Motor Cruiser. 4 cyl. 32-37 h. p. STANDARD engines.

Back of the STANDARD guarantee is

The Standard Motor Construction Co.

178 Whiton St., Jersey City, N. J.

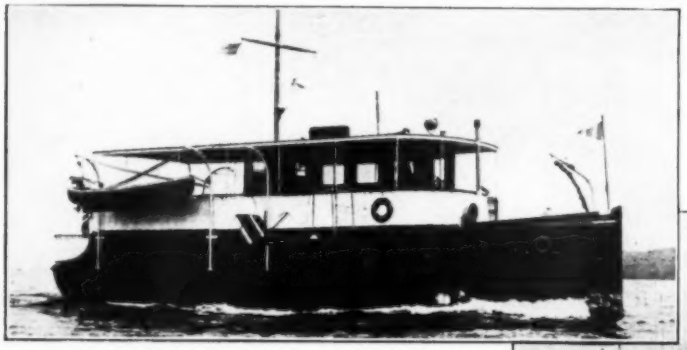
NAVAL ARCHITECTS GIELOW YACHT BROKERS

Designs of

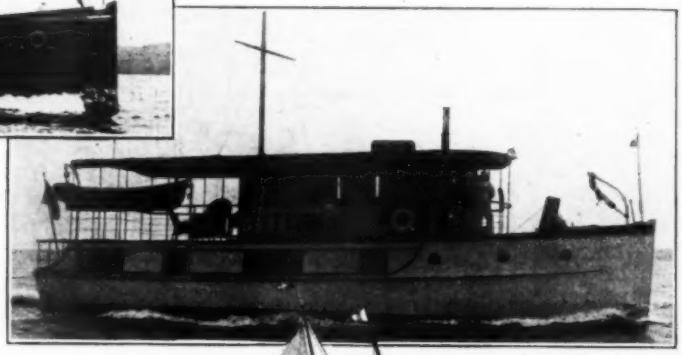
Henry J. Gielow, Inc.

25 West 43rd Street,
New York, N.Y.

Telephone: Murray Hill 9134



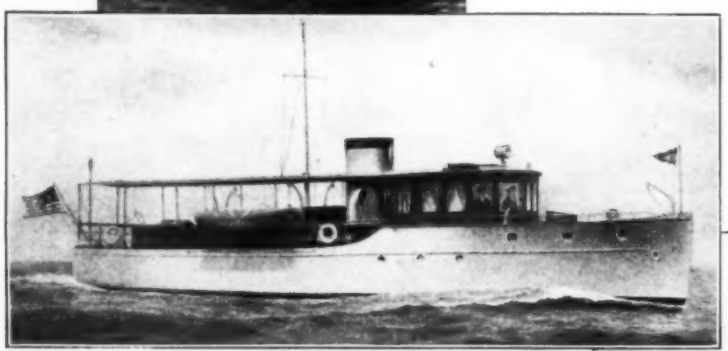
TERRYBILL II, 50' x 14'6" x 3' Houseboat designed for H. I. Stengel of New York.



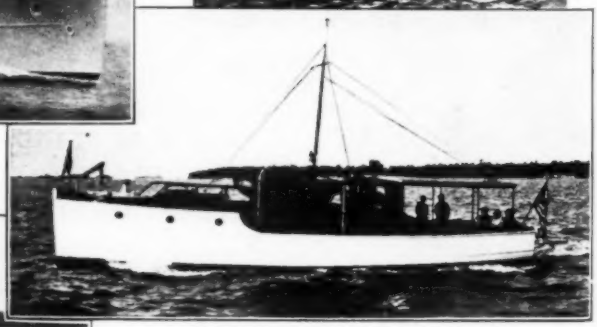
MARY ELLEN, 50' x 14'6" x 3' Houseboat designed for J. Curtiss McKallip of Houston, Texas.

LEA, 6-metre yacht designed for John Bermingham of New York. Lea won the greatest number of points of any of the eight contenders in the International Six Metre Race at Oyster Bay, Long Island, Sept. 9-12, 1922.

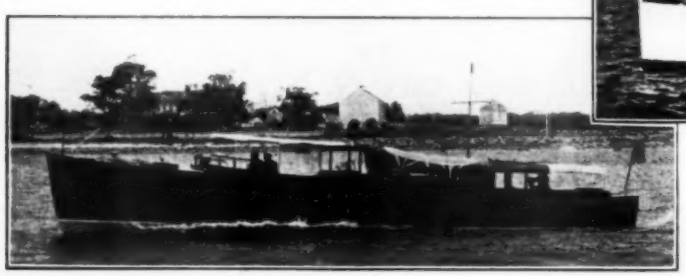
NIRVANA, 68' x 15'8" x 9'6" Auxiliary Schooner Yacht designed for Mr. H. Struckmann of New York.



65' x 13'8" x 4' Motor Yacht designed for T. B. Van Dorn of Cleveland.



TONKAWE, 47' x 12' x 3'6" Motor Cruiser designed for A. R. Southworth of New York.



SHEERNESS, 60' x 10' x 3' Express Runabout designed for Marshall Sheppy of Toledo, Ohio. Speed 25 miles.

NAVAL ARCHITECTS GIELOW YACHT BROKERS

HUSSAR III

Twin Screw Diesel Yacht, length 145 ft., beam 20 ft. 8 inches, draft 8 ft. Owner—E. F. Hutton of New York. Designers—Henry J. Gielow Inc. 25 West 43rd St., New York. Builders—Kyle & Purdy, City Island, New York. Power Plant a pair of six cylinder 11x14 inch Winton Diesel engines, designed and built by the Winton Engine Works, Cleveland, Ohio.

WINTON ENGINE WORKS

CLEVELAND, OHIO, U. S. A.

New York City: A. G. Griese, Inc., 30 Church St.
New Orleans: A. Baldwin & Company
Washington, D. C.: R. L. Fryer, 817 Alboe Bldg.
Los Angeles: F. G. Bryant, 704 Delta Bldg.
Seattle: H. W. Starrett, Sunset Engine Co.

Winton

PALMER ENGINES

TRADE MARK REG. U.S. PAT. OFF.

Power Your Boat with a Palmer Engine

$700.00

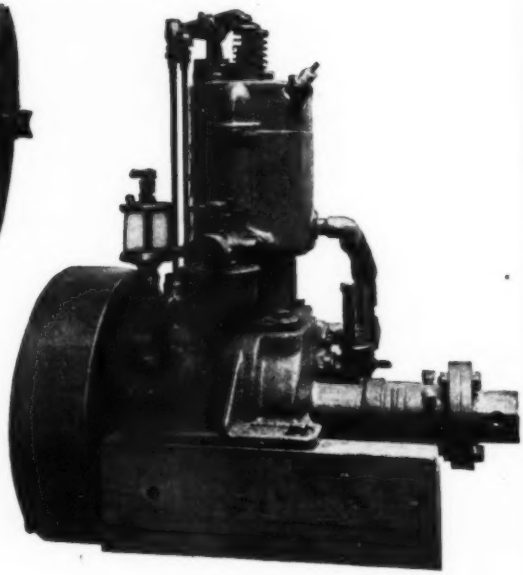
Model VH, 14-16 H.P.

A high speed four cycle engine with enclosed overhead valves and overhead camshaft. Equipped with starter, generator, battery, high tension magneto, jump spark ignition. Four cylinders, cast en bloc.

There isn't a handsomer, smoother running or more up-to-date engine on the market than the Palmer Model VH.

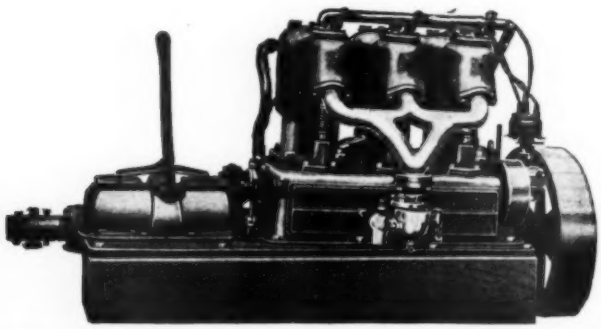
Palmer Engines are reaping the reward of more than a quarter century of honest manufacturing and fair dealing. Year in and year out, Palmer popularity grows as new buyers are added to the hundreds of boatmen who are operating Palmer Engines with supreme satisfaction.

Palmer Engines are built for every type of boat, 2 H.P. to 80 H.P. High speed, medium duty and heavy duty.



$98.00 Model YT, 2 H.P.

A four cycle valve-in-head motor designed especially for yacht tenders and other small boats. Weight 95 lbs.



The famous Palmer NR, the most popular medium duty marine motors on the market. Bore 5 inches. Stroke 6 inches.

NR-2	10-12 H.P.	$425
NR-3	15-18 H.P.	$600
NR-4	20-24 H.P.	$775

You'll never find a better built, more carefully designed or more reasonably priced motor than the Palmer, no matter which size and type of Palmer engine you consider.

Write today for latest illustrated catalog

PALMER BROS., ENGINES, Inc., Cos Cob, Conn., U.S.A.

Branches and Distributors:

New York, 128 Lexington Ave., bet. 28th & 29th Sts.
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Philadelphia, 9 N. 6th St.
Portland, Maine, Portland Pier
Boston Mass., Rapp-Huckins Co., 89 Haverhill St.,
Norfolk, Va., Gas Engine & Boat Corp.
Jacksonville, Fla., 122 So. Ocean Street
Vancouver, B. C., V. M. Dafoe

Advertising Index will be found on page 130

Twelve Inches Draft

INDESTRUCTIBLE STEEL HULL MOTOR BOAT

For Pleasure or Commercial Use

Length 26' — Beam 6' 6"

Here is the ideal shoal-draft motor boat for pleasure or commercial use on rivers, bays, canals, lakes and coastwise waters. Staunch and sturdy for heavy duty work,—practically indestructible under conditions that would wreck an ordinary boat,—stiff and seaworthy enough to ride the waves like a cork,—you'll find this boat suited for every kind of ordinary or extraordinary service.

This is a tunnel stern boat with the propeller protected from damage because it operates within the tunnel.

The hull is built of No. 16 gauge galvanized steel and is divided by four galvanized steel watertight bulkheads, two of which act as collision bulkheads, the other two forming a watertight and fireproof engine compartment amidships.

The deck and lockers are made of cypress, the plank shear, combing and towing posts are made of oak, and the flooring is made of pine.

The forward cockpit measures 6 ft. x 7 ft. 6 in. and the after cockpit 6 ft. x 5 ft. 5 in., seating 14 passengers comfortably. The capacity can be increased to 26 passengers by installing additional seats. For commercial use this boat can be loaded up to five tons with sufficient free board.

Hatches in the forward and after decks provide access to the storage compartments and ample lockers are provided under the seats.

The standard motor equipment is a10-12 H.P. Palmer Model N-R 2, bedded on two longitudinals and four transverse steel girders, covered with a hinged top galvanized steel hood, complete with reversegear, bronze shaft and bronze propeller. Any other motor equipment can be supplied by special arrangement or the boat can be purchased without motor equipment.

AMERICAN BALSA COMPANY, Inc.

WELIN MARINE DEPARTMENT

Motor Boats, Balsa Aquaplanes and Water Sport Buoyants

PHONE: HUNTERS POINT 3781

305 Vernon Avenue Long Island City, New York, N. Y.

TRADE MARK

W C Auto-boat and Bridge Deck Steerers

One of the 1001 WC Products

Strength and correct mechanical construction; taught by 75 years' experience in the manufacture of Marine Hardware, mark the WC line of Auto-Boat and Bridge Deck Steerers.

Model A

Heavy Brass Inside Steering Post.

A heavy brass steering post operates inside the steering column, and the pinion or drum is firmly keyed to this post between an upper and lower bearing. This divides the strain and makes for ease in steering. WC Steerers are equipped with smooth friction Spark and Throttle Controls placed conveniently inside the wheel. All metal parts are of brass with exposed parts highly polished. The wheel rims are of laminated maple stained mahogany.

Grooved Drum and Horn Buttons

If desired, WC Steerers can be had with a special grooved drum to prevent the tiller rope from over-riding. Models A, B and C are also equipped with horn buttons when specified.

Lower Priced Single Post Steerer Model M

The Model M is similar in appearance and finish to our higher priced steerers; but it has no heavy inside steering post, the brass tubing that forms the column being fastened directly to the wheel and drum, and serving as both steering column and steering post. It is intended only for the smaller types of runabouts and auto-boats, and is not recommended for heavy work.

Model M

Single Post Steerer for smaller boats only.

Special Circular showing full line of WC Auto-boat and Bridge Deck Steerers, together with name of dealer near you, gladly sent on request.

Get This Book of Helpful Hints for Motor Boaters

"Sea Craft Suggestions and Supplies" solves those daily "Puzzlers" that few know how to handle. Tells how to Box the Compass; what is Proper Ground Tackle; gives hints on Steering Gear, etc.; describes WC Dependable Marine Hardware, tells uses. Compiled from 75 years' experience in making marine fittings. Sent prepaid for 50c.

Wilcox, Crittenden & Co., (Est. 1847)

4 South Main St., Middletown, Conn.

Advertising Index will be found on page 130

V3619

OBE

J. V. B.

NOW Elco ENGINES

J. V. B. ENGINES—universally endorsed as the most up-to-date, modern and improved engine of the marine type—will hereafter be manufactured exclusively for ELCO—and will be known as ELCO ENGINES.

ELCO have been using these engines in their famous Cruisettes and other models for the past three years and unhesitatingly state that, in their thirty years' experience, they have never known an engine which has proved itself so consistently satisfactory in the hands of owners—economical to operate and low in cost of repairs.

The Wellman-Seaver-Morgan Company, of Cleveland, Ohio, will continue to manufacture these MARINE ELCO ENGINES—but the distribution will be entirely through ELCO.

This change in handling these superb marine power plants will give prospective users the advantage of Elco distribution and Elco service.

Agencies will be established in all principal centers.

ELCO

5 Nassau St., New York City — Works, Bayonne, N. J.

COMET TACHOMETER

Price $27.00

Specialists in electrical equipment for motor boats and yachts. Comet Boat Lighting Plants, Generators 6-8 volt to 110 volt, Switchboards, D. C. Magnetos for make and break or jump spark. Tachometers, etc.

Write today for Bulletins and prices.

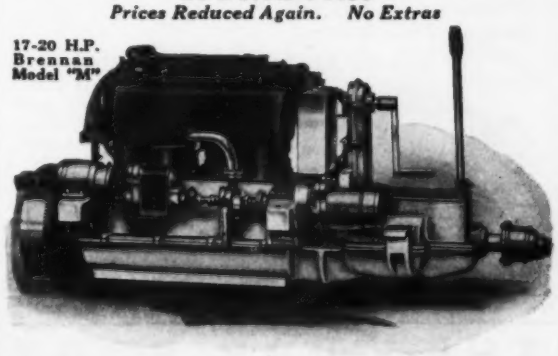
COMET ELECTRIC CO. 1241 St. Paul St. Indianapolis, Ind

A New BRENNAN

at a New Price

Prices Reduced Again. No Extras

17-20 H.P. Brennan Model "M"



Brennan Standard Motors Lead in Marine Value

The Brennan is a complete power plant with two unit electric lighting and starting system, and every other accessory built in. No extras required as our equipment embodies a complete outfit. This applies also to the Brennan Model B medium duty 25-35 H.P., and the Model B high speed type 35-40 H.P.

At our new reduced prices this completely equipped motor, including electric starter, costs you no more than an ordinary motor without equipment.

Write today for catalog and prices.
Order quick if you want early delivery.

BRENNAN MOTOR MFG. CO.

500 East Water St. Syracuse, N. Y., U. S. A.

Cable Address: "Binot"

PROPELLING MACHINERY
Turbine
Electric
Diesel-Electric

WESTINGHOUSE ELECTRIC

MOTORS and CONTROLLERS
for
Shipyard and
Shipboard

Westinghouse Electric & Manufacturing Company
East Pittsburgh, Pa.
Sales Offices in all Principal American Cities
Hunt, Mirk & Company
Special Pacific Coast Representatives
San Francisco, Cal.

Speed!

20 TO 40 M. P. H.

Red Bank Sea Skiffs combine the staunchness and seaworthiness of the skiff with the speed of the modern high power runabout. The ideal inexpensive fast boat, giving all the sport without the expensive frills and mahogany finish.
26' x 6' Standardized Sea Skiff, seats 10
20 M.P.H. with 50 H.P. 35 M.P.H. with 200 H.P.
30 M.P.H. with 100 H.P. 40 M.P.H. with 300 H.P.
Makes an excellent yacht tender when fitted with hoisting irons. Hull complete except engine, shaft and propeller, $900. (including tax). Will install your motor for $100. Order now for Florida delivery.

RED BANK YACHT WORKS
Phone: Red Bank 840 Red Bank, N. J.

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"The Engine that Makes Good"

PEERLESS Marine Motors have proved it isn't necessary to pay a fancy price to get a satisfactory power plant. 5 to 50 H.P. for medium and heavy duty, suited to all types of boats. You will find them in classy runabouts, in big cruisers and hard working fish boats.

Let us tell you the size, power, dimensions and price of the Peerless most suitable for your boat.

Write to-day for latest catalog, giving dimensions and details of your boat.

Peerless Marine Motor Corp.
2160 Niagara Street Buffalo, N. Y.

Cap'n Allswell says:
"A Hard Drivin' Propeller's Like Lead Soles On Your Boots"

"It uses up power and hampers speed. If you want your boat to get around lively, equip her with a perfectly balanced, easy twirlin' Columbian. Let me send you the Columbian Book; it's full of sound, practical propeller talk."

The Columbian Bronze Corporation,
204 North Main Street,
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For N. Y. C. Sales Only: 44 Third Ave.
COLUMBIAN *Bronze* PROPELLERS

The Compass For Your Boat
should be the best obtainable. For seventy years Ritchie compasses have been the choice of experienced navigators.

Select the Ritchie for your boat.

Our catalog will show you the one best suited for your needs. Send for a copy today.

E. S. RITCHIE & SONS
Established 1850
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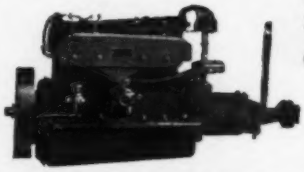
CADY FORD MARINE MOTORS
12-16 H. P., 4 cyl., 4 cyc.
FORD REPLACEMENTS IN STOCK EVERYWHERE

Write today for details, specifications, prices, equipment and name of nearest dealer. We also build 2 cycle motors 1½ to 8 H.P., famous for 26 years.



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304 Centre St.,
Canastota, N. Y.
Established 1883

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A Gentleman's Cruiser
28 ft. long

Designed by a competent architect, constructed by master boat builders and finished throughout like a high grade yacht. The GRAY BOAT is everything you could desire in a cruiser of its size. Beauty, comfort, pleasure, safety, convenience, roomy accommodations and class. Sleeps four inside, full headroom, light ventilated cabin separated from motor, toilet, folding basin, galley, stove, refrigerator, ample locker space, large cockpit. Absolutely complete cruising equipment.

De Luxe Model, mahogany finish, brass fittings. Practical Man's Model, oak finish, galvanized fittings.

Powered with Fay & Bowen LN-41, 16 H.P., Speed 9-10 miles per hour.
Powered with Fay & Bowen LN-42, 30 H.P., Speed 11-12 miles per hour.
Write for prices.

GRAY BOATS, Thomaston, Maine, U. S. A.

"WOLVERINE"
Four Cycle Airless Injection
CRUDE OIL
ENGINES—46 to 95 H.P.

Instantaneous Starting from Cold
No Hot Bulbs—No Electricity
No Water Injection
THE MOST ECONOMICAL TYPE OF ENGINE KNOWN
Send for Catalog No. 141

WOLVERINE MOTOR WORKS
43 Union Avenue
Bridgeport, Conn.

Advertising Index will be found on page 130

PURDY BOAT COMPANY

Designers and Builders of

EXPRESS CRUISERS

TRENTON MICHIGAN

SURPLUS U. S. NAVY EQUIPMENT

AND MOTOR BOAT SUPPLIES

7 x 7 x 9 $15.00
Special Price in dozen lots

Huge Quantities of U. S. Navy and Shipping Board Surplus Stock at Ridiculously Low Prices

Including Manila Rope, all sizes; Life Preservers, all kinds; Brass Liquid Fire Extinguishers, Lamps, Ships' Watches, and assorted hardware including Solid Copper Binnacle, finished black outside, white enamel inside. Complete with lamp handle, bracket, and a 4-in. Standard Navy Compass, marked in degrees. Guaranteed new, accurate and perfect. Value $50.00. Price $15.00.

Dealers: Send for Complete List and Wholesale Price List

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YACHTS -- CRUISERS -- HOUSE BOATS

Experience Teaches—Hence the reason that once an owner of a New York Yacht Launch and Engine Craft always an owner. Many years' experience in high class Yacht Design and Construction are at your service.

20th CENTURY MOTORS

400 to 500 R. P. M.
Heavy Duty Type
Four cycle. Bore 6½", Stroke 8"

2 cyl. 15-20 B. H. P.
4 cyl. 40-50 B. H. P.
6 cyl. 65-75 B. H. P.

NEW YORK YACHT LAUNCH & ENGINE CO., Morris Heights, New York City

The Barker Motor (Two-Cycle)

"Have run my Barker Motor thirty thousand miles in ten years and it is good for ten years more."—Name on request.

Built for long service—New low prices in effect

The BARKER FACTORY *Norwalk, Conn.*

Write today for "Red Letter Book" of Motors

In New York: TOPPING BROS., Varick and Vandam Sts. In Boston: TOPPAN CO., 101 Haverhill St.

PIGEON·HOLLOW SPARS

Famous Racing and Cruising Yachts in every country are equipped with our spars. Hollow and solid Marconi Masts, Brass fittings—Rigging work, Brass track and Slides

PIGEON HOLLOW SPAR CO., East Boston, Mass.

A boat the entire family will enjoy

The Quaker Maid, 42'x 9'6" V bottom Bridge Deck Cruiser. Complete K. D. frames furnished to Edwin E. Hollenback, 1804 Brandywine St., Philadelphia, Pa.

RICHARDSON Cruisers are staunch and steady. Built for comfort and seaworthiness. The greatest boat value. Fully equipped cruisers $2,500 up. K. D. frames to complete outfits for all types of boats. Let us quote.

Oberdorfer Pumps

For Water, Fuel or Oil

These efficient bronze-geared pumps save gasoline and repair bills. Made for all internal combustion motors. Long wearing and noiseless in operation. Write for interesting booklet—sent free.

M. L. OBERDORFER BRASS CO.
125 Thompson Road, Syracuse, N. Y.

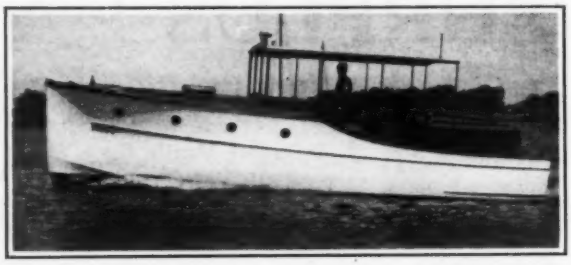
—the battery that won't die when a wave slaps it!

Columbia *Steel Case* "Hot Shot" for Ignition

waterproof—super-durable—unbreakable—costs no more than fiber case batteries

For sale everywhere

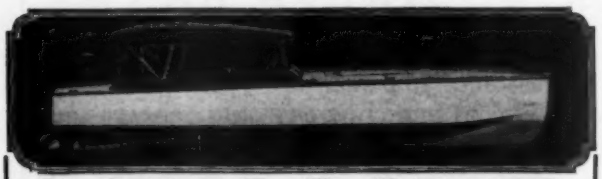
Columbia Dry Batteries
—they last longer



The Harrison Standardized Double Cabin Cruiser 32 ft. x 8 ft. 6 in. x 2 ft. 10 in., equipped for Salt Water, Sleeps Six Persons, Motor 40 H.P., Speed 12 M.P.H. Price $4950.00.

Illustrated literature sent on request.

R. W. HARRISON BOAT WORKS Established 1897 Bay View Park, Toledo, Ohio



MULLINS
STEEL BOATS CAN'T SINK

Read about the Mullins "V" Bottom—fastest, safest, finest boat of its kind. Write for big, new, illustrated catalog, describing Mullins power boats, rowboats and canoes. Send post card now.

Mullins Body Corporation, Boat Dept., 644 Depot Street, Salem, Ohio

DISAPPEARING PROPELLER BOAT

The propeller automatically disappears up into housing safe from harm the moment the protecting skeg strikes an obstruction.

HERE is a real motor boat—sturdily built, easily operated and beautifully finished in natural woods. Each is equipped with a Marine Motor capable of any speed up to nine miles per hour. No vibration. A Maxim silencer completely muffles the noise of the exhaust. You can ride safely in a Disappearing Propeller Boat over sandy shallows and sunken logs. An automatic device protects the propeller from obstructions. (See diagram.)

Write for descriptions, colored illustrations and prices.

DISAPPEARING PROPELLER BOAT CORPORATION
725 Main Street Dept. F Buffalo, N.Y.
Canadian Offices: Toronto, Canada.

The Gordon Reversible and Feathering Propeller

Forward, reverse, feathering, and neutral without the weight, cost or space occupied by a reverse gear. For launches, runabouts, cruisers and work boats.

Write today for circular and prices

THE GORDON PROPELLER & MFG. CO.
9006 Desmond Ave. Cleveland, Ohio

Electrically Propelled Non-Sinkable Cruiser

"LIGHTNIN"

READY NOW FOR IMMEDIATE DELIVERY

Write for Information
WILLIAM T. DONNELLY
Room 1023 17 Battery Place, N. Y.

Advertising Index will be found on page 130

10-G-A

There's No Profit in Marking Time

WAR DEPARTMENT	SELLING PROGRAM
DECEMBER	
Dec. 7.—SYMINGTON GUN PLANT—Chicago, Ill., Auction. For catalog write Q. M. Construction Service, 3335 Munitions Bldg., Wash., D.C., or Chas. S. Gerth, 101 W. 42nd St., New York City.	Dec.13—ORDNANCE MATERIALS—Rock Island, Ill., Sealed Bids. For catalog write Commanding Officer, Rock Island Arsenal, Rock Island, Ill.
Dec. 8—LEATHER & HARNESS—New Cumberland, Pa., Auction. For catalog write Q.M.S.O., 1st Ave. & 59th St., Brooklyn, N. Y.	Dec. 15—Q. M. SUPPLIES—Philadelphia, Pa., Auction. For catalog write Q. M. S. O., 1st. Ave. & 59th St., Brooklyn, N. Y.
Dec. 12—Q. M. SUPPLIES—Columbus, O. Auction. For catalog write Q. M. S. O., 1819 W. Pershing Road, Chicago, Ill.	Dec.19—ORDNANCE MATERIALS—Middletown, Pa. Auction. For catalog write Phila. Dist. Ord. Salvage Board, Frankford Arsenal, Phila., Pa.
Dec.13—ORDNANCE MATERIALS—Morgan Depot, South Amboy, N.J., Auction. For catalog write Phila. Dist. Ord. Salvage Board, Frankford Arsenal, Philadelphia, Pa.	Dec. 20—FLOATING EQUIPMENT—San Francisco, Cal., Sealed Bids. For catalog write Western Surplus Property Control Officer, Ft. Mason, San Francisco, Calif.
	The Government reserves the right to reject any or all bids.
SEND FOR CATALOG	SEND FOR CATALOG

IDLE machines do more than gather dust. They pile up a costly overhead—while you're waiting for the material that wasn't delivered on schedule.

Many a plant has been saved this embarrassment and expense by discovering a War Department Sale on just the materials they needed. For every War Department Sale means *immediate delivery!*

And a big saving, as well.

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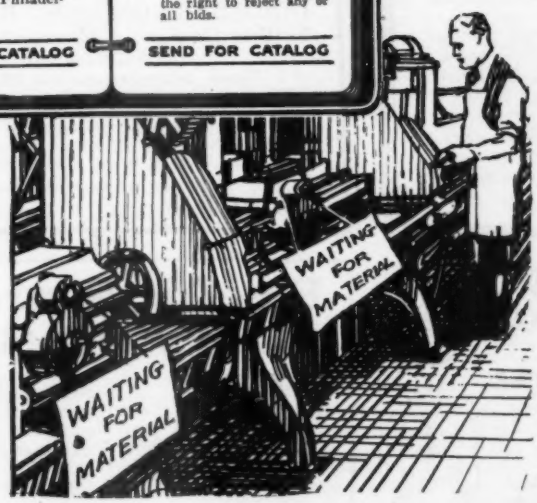

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Successors to

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Largest and most reliable Boat Builders.

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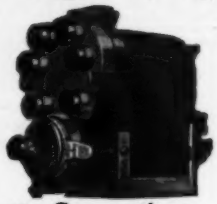
Trade Mark

This trade mark on a starting, lighting or ignition unit or part stamps it as a genuine Bosch Product—backed by the Bosch guarantee of dependable service.



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Let us increase your boat speed with a

B & B Propeller

We are so sure that the celebrated B & B Propeller will make your boat go faster that we positively guarantee it to increase your speed from one to three miles per hour.

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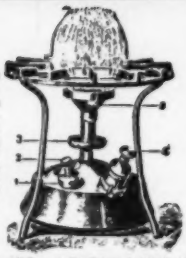

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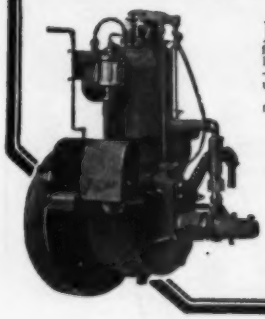
BOAT SUPPLIES

Michigan Marine Motor $115

Repairs at any Ford Garage



FROM every standpoint—dependability, performance, quick starting, fuel economy, lightness, compactness, and low price—the Michigan Marine Motor stands unapproached.

Here is a 4-hp. 4 cycle, 125-lb. motor, fully guaranteed for one year. It rarely requires adjustment and may be repaired at any Ford garage. Admirably adapted for tenders, launches, fishing boats, and other craft requiring a full-powered motor of unfailing reliability. With Bosch Magneto and impulse coupling, $30 extra. Built by Michigan Marine Motor Company.

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DORIES LAUNCHES ROWING SKIFFS
Sailing Dories Marconi rigged Cat boats

Detachable motor boats.

15 ft. Toppan detachable motor boat $98. Carries 6. With Elto motor, $213.

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Send for catalog of type boat you want.

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EVERYTHING FOR THE PERSON OF THE YACHTSMAN, HIS OFFICERS AND HIS CREW

Clubs, yacht owners, commercial boat owners, should take advantage of our many years' experience in outfitting the mariner, both inland and deep sea.

Crews and Club Attendants furnished without Charge.

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ARC OR INCANDESCENT

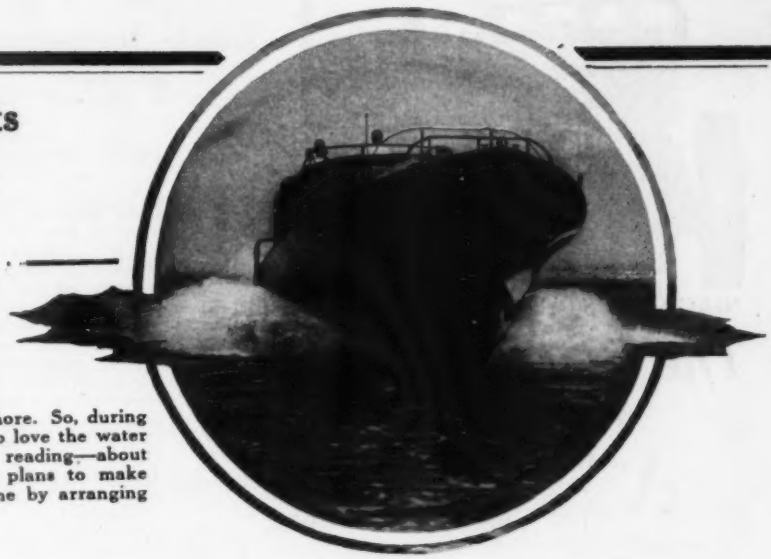
A Searchlight for any purpose. Arc Searchlights for 110 volts. Incandescent Searchlights for low voltage. In sizes from 7 inch to 60 inch. High efficiency. Moderate price. Special glass mirror. Sturdy cast bronze fittings.

Send for Latest Catalog

THE CARLISLE & FINCH COMPANY
261 East Clifton Avenue
CINCINNATI, OHIO

Advertising Index will be found on page 130

Winter Only Whets Our Love for this Great Sport!



EVERY enthusiastic boatman knows this. Every "fan" who has felt the tingle of wind-tossed spray knows that the lure of the water, like most things unattainable, becomes stronger when we are unable to gratify it; when docks are encrusted with ice and snow, and canvas-covered boats rise like phantoms in the mist on every shore. So, during the long Winter months, those of us who love the water spend much of our time dreaming and reading—about boats. Realizing this, MoToR BoatinG plans to make this Winter a cheerful and profitable one by arranging the following—

Three Special Offers for Ice-bound Boatmen

SPECIAL OFFER No. 1

MoToR BoatinG for one year and a cloth-bound copy of "The Cruise of the Hippocampus" for $3.50. This is a $5.00 value for $3.50, as the regular price of the magazine is $3.00 per year and the book is selling in leading bookshops for $2.00. "The Cruise of the Hippocampus", written by Alfred F. Loomis is one of the finest cruising stories ever written. It tells, in this well-known author's inimitable style, about the experiences encountered on a 3,000 mile trip in a 28-foot yawl covering many points of interest down the Atlantic Coast, through the West Indies and across the Caribbean Sea to the Panama Canal. This great book proves the possibilities of small boat cruising as nothing has ever done before.

SPECIAL OFFER No. 2

MoToR BoatinG for one year and a complete set of 36 Motor Boatmen's Charts, printed in book form, for $3.50. Printed on card-board these unusually valuable charts have sold for $1.50 per set of twelve. The Charts include practically every important port and harbor on the Atlantic Coast, together with Lake Erie, St. Lawrence River and other important inland waters. These Charts are invaluable for use on small boats and motor yachts as they give distances, compass courses, sailing directions, aids to navigation, etc. This is the first time these Charts have been printed in book form.

SPECIAL OFFER No. 3

MoToR BoatinG for one year and "Five Hundred Questions and Answers for Motor Boatmen", (a new book just issued) for $3.50. "Five Hundred Questions and Answers for Motor Boatmen" is a practical guide-book for those interested in boats and boating. It comprises the list of questions used in the popular Correspondence Course conducted by MoToR BoatinG, together with the correct answers. This book is printed on a good quality of paper and constitutes a most interesting and valuable course of study for those who desire to know more about operating and navigating a boat.

These three offers are open to every reader of MoToR BoatinG whether a subscriber or not. If you are now on the regular subscription list you can take advantage of any one of the three opportunities and we will extend your present subscription for an additional year. Do not overlook this chance to provide your boating entertainment for the coming Winter.

Send No Money

You need send no money with your order. The attached coupon is ready for your signature and address. We will send you a bill when we enter your subscription, and send you the book when we receive your remittance. But be sure to mail the coupon today and don't fail to indicate which offer you select.

Motor BoatinG,
119 West 40th St.,
New York, N. Y.

I desire to take advantage of the Special Offer checked below as advertised in the December issue of MoToR BoatinG. Enclosed find remittance of $.....(or) Send me a bill and I will forward the remittance to you without delay.

Offer No. 1 MoToR BoatinG for one year, and "The Cruise of the Hippocampus", $3.50
Offer No. 2 MoToR BoatinG for one year, and book of 36 MoToR Boating Charts, $3.50
Offer No. 3 MoToR BoatinG for one year, and new book "Five Hundred Questions and Answers for Motor Boatmen", $3.50

Name .....

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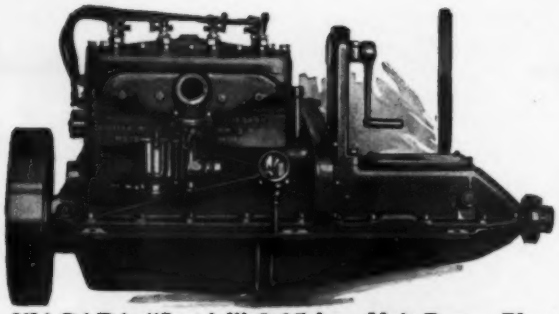
Dec. **City & State** .....



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The Ideal Power Plant for Small Boats

A REAL four cylinder four cycle unit power plant that gives the easy starting, steady power, flexibility and freedom from vibration that you can find only in this type of engine. Costs no more than most two cycle engines of equivalent power.

Bore 2-5/8", stroke 4", Medium duty, 600 to 1100 R. P. M., 7 to 12 H.P. High duty, 1100 to 1800 R. P. M., 12 to 15 H.P. A complete and compact little motor that looks good in any boat. Regular equipment includes built-in rear starter, reverse gear, sight-feed lubricating system, carburetor, superheated intake manifold, detachable cylinder head, bronze rotary water pump, covered valve mechanism, with option of coil and timer, magneto or Atwater Kent ignition.

Other Niagaras up to 120 H. P.

The NIAGARA E-2 is 12-14 h.p., 2-cyl. 4 cycle, for FISHING AND HEAVIER SMALL BOATS.
The NIAGARA E-4 is 20-30 h.p., 4 cyl. 4 cycle for FISHING, LIGHT CRUISERS AND SPEED RUNABOUTS.
The NIAGARA D-4 is 40-60 h.p., 4 cyl. 4 cycle for COMMERCIAL BOATS, TUGS, ETC.
The NIAGARA D-6 is 60-120 h.p., 6-cyl. 4 cycle for CABIN CRUISERS, MOTOR YACHTS, PASSENGER AND SERVICE BOATS.

We build a motor for every boat from 14 ft. to 62 ft.
Write today for catalog and prices.
Valuable Territory Available for Marine Engine Agents.

Niagara Motors Corporation
206 Niagara Blvd., Dunkirk, N. Y

Skipper and The Skipped

(*Continued from page 10*)

that there is a promontory extending out into the water off our port bow?"

"No-no-no! That's Point-No-Point."

I unconsciously searched for my spectacles.

"Huh? Say, what are you trying to do, kidd me? You mean to insinuate that that point is a point and yet it isn't a point?"

For the first time in history the Skipper displayed a little patience. "Looka here, yuh little imbecile," he instructed, "I ain't sayin' that that point ain't a point at all. Point-no-point is the name of that point, sabe?"

"Oh," I muttered, "most assuredly I understand, Old Dear!" However, I spent practically the whole night vainly attempting to figure out just what sort of a Chinese puzzle the Skipper was trying to wish onta me. I had a vague idea and suspicioned, as the Prince of Wales might say under the circumstances, that the "bloomin' idiot was spoofin' me."

I was awakened at the first sign of dawn by the throb of the engine and upon going on deck discovered that a storm had arisen and that the Skipper had been compelled to resort to the engine in order to buck the terrific headwind and the ebb flow of the tide. "Aint got room to tack," he said. "Gotta use the engine to cut this gale." We were apparently following up a channel about a mile wide, the shores of which loomed dark and indistinct in the gathering storm.

"Hood's Canal?" I asked.

He nodded and I ducked back into the cabin in order to avoid the spray of a large breaker that was washed clear over the bow of the little Graybug. In the cabin I encountered the Mate, who was profanely attempting to prepare breakfast despite the roll and pitch of the schooner. At my appearance he placed the muffler on the vulgarity and honored me with a sickly, apologetic sort of grin. "What 'er yuh gonna do when we reach the head of the Canal?" he asked abruptly.

"I don't quite know just what I shall do," I replied, shrugging my shoulders. "I certainly would enjoy spending a couple of days in the hills; hunting, if I possibly can."

"What 'er yuh gonna hunt for?"

"I don't know. What is there to hunt for?"

"Plenty of animals, both large and small. Why don't you try for Moose?"

"Moose?" I gasped. "How in the world am I going to hunt for Moose when the largest member of the animal family that I have ever had the good fortune enough to slay was the neighbor's serenading cat, Musical Thomas? Even then, just between you and I it was just purely accidental that I did manage to hit him."

It was plainly seen that the old fellow had, as the Skipper would probably say, a load on his chest which he wished to unload upon me. "Wal, Buck," he was almost apologetic in his tone, "course yuh didn't hire me to accompany yuh on any hunting expedition or anything like that, but I reckon that I might be able to show yuh how to capture th' wily ole Moose, if it wouldn't be too much of a bother to take an old guy like me along with yuh up into the hills."

"So you have hunted Moose, eh, Slim?" I asked. "That's fine. With your able leadership there is no reason in the world why we should not be able to kill ten or twelve of them. Surely you may come with——" A sudden lurch of the schooner sent me diving head first into the nearest bunk while the Mate, much against his better judgement, sat majestically upon the hot stove. With a yell of pure agony which would have rivalled a steam siren, he dove for the deck, forgetting for the moment all about our proposed Moose hunting expedition. I could not help but double over the cabin table in a spasm of laughter at his comic antics.

And through it all Graylin's four horse-power clockwork of an engine kept up its weary put-put-put, ever forging ahead towards our destination and the proposed Moose hunt.

It was still storming when we came to anchor in a sheltered little lagoon whose waters apparently knew nothing of the fury of the storm in the open sea. Once again in calm weather the Mate took heart enough to resume the preparation of the belated breakfast.

Towards noon it began to rain and as the patter of the raindrops on the deck increased I began to curse the Editor who had advised me to take my annual vacation in the Fall of the year instead of Summer, as I had previously planned.

All that day and night and the next day it continued to rain and little by little the small stream which emptied into the lagoon began to swell until it became a roaring torrent, hurling roots and trunks of trees into the bay.

For two days we remained cooped up in the small cabin, until even Spottie became irritable and failed to wag his stub tail even when a meal was being prepared. Story telling and poker became the favorite pastime and I'll have to admit that in either of these my crew loomed up large on the horizon, so to speak.

On the third day the storm abated somewhat and the rain

(*Continued on page 96*)

Advertising Index will be found on page 130

The Tebo Basin Plant of Todd Shipyards Corporation in Brooklyn offers special facilities for yacht building, refitting, and repair work, with a trained force of workers experienced in this exacting and important work. The illustration shows the S. Y. Oneida drydocked at the Tebo plant, undergoing complete refitting from the designs of Cox and Stevens.

PLANTS

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Erie Basin, Brooklyn, N. Y.

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Clinton Dry Docks, Inc.
Foot of Clinton Street, Brooklyn, N. Y.

White Fuel Oil Engineering Corp.
Todd Oil Burning Systems
742 East 12th Street, New York City

Todd Dry Dock & Construction Corp.
Tacoma, Washington

Todd Dry Docks, Inc.
Harbor Island, 16th Ave., S. W.
Seattle, Washington

Todd Shipbuilding & Dry Dock Co., Inc.
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TODD SHIPYARDS CORPORATION

Plant of TEBO YACHT BASIN COMPANY

Foot of 23rd Street, Brooklyn, N. Y.

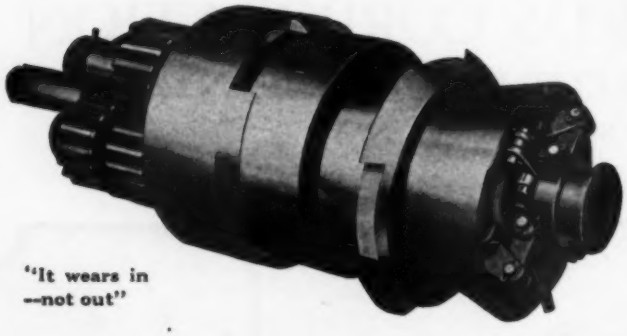
TODD
NEW YORK, U.S.A.

Install a STANDARD

the REVERSE GEAR with the MULTI-CONE CLUTCH

There are other good reverse gears but there is no other gear with the MULTI-CONE CLUTCH, an exclusive Standard feature. Therefore no gear can equal the Standard because there is no clutch to equal the Standard MULTI-CONE.

This clutch takes hold like velvet, holds on to the load like a bull-dog and releases instantly when you throw the lever. It actually improves with use and is so easy to adjust that you can do it in a few seconds without any other tools than a screw driver.



"It wears in --not out"

The smooth engagement and tremendous holding power of the MULTI-CONE is due to its great friction surface. See the four large cones in the illustration and note that all the friction surface is at the point of greatest diameter, which increases the leverage and holding strength. These cones are much larger and sturdier than the thin plates used in a multiple disc clutch.

And then remember that the Standard is an enclosed gear, running in oil. This reduces wear and noise to the minimum. The case is absolutely oil tight. A ball thrust bearing is built into the case. This gear is easy to install and is built to outlast your motor.

Write today for details and prices giving size and power of your motor.

Model "C" Standard Multi-Cone
for
100 H. P. Hall-Scott
Entirely Enclosed
$100 COMPLETE

The Standard Midget
The smallest reverse gear made. Transmits ½ H.P. per 100 R.P.M. A real Standard with Timken roller bearings and Multi-Cone Clutch.

STANDARD GEAR CO.

2819 Brooklyn Ave., Detroit, Mich.

Advertising Index will be found on page 130

A Little Giant of Power and Reliability

It Is Built Right

Has a Real Rudder
Self Locking Tiller
Under-Water Exhaust
Adjustable Weedless Propeller
Automatic Tilting
Protected Spark Plug
Battery Ignition or
Flywheel Magneto

$70.00

New Low Price on Complete Motor for Battery Ignition

Spinaway Detachable Rowboat Motor

It Works Right

Absolute Reliability
Easy Starting
Easy Portability (weight 52 lbs.)
Perfect Safety
Simple to Operate
Fits Practically Any Row Boat
Steady Flow of Power
Finest Material and Workmanship
Lowest in Price

$80.00

New Low Price on Complete Motor for Magneto Ignition

A Clean-Cut Saving of One-Fourth

These are the identical motors that have been selling for $90 and $95. We build only one kind —the best. Compare it in quality and price with any other outboard motor. Read our liberal guarantee.

These Men Know

"I have been using a Spinaway Motor for six years on my vacations throughout Michigan and Canada and it has certainly proved to be a dependable little outfit."—D. S. A. Pa.

"I wish to express my satisfaction as to the performance of the Spinaway Motor which I bought from you. It is easy to start, runs smoothly and has power equal to any of the outboards."—E. B. Ill.

"I received the motor yesterday and gave it a try out. It runs like a top. Am very much pleased so far and had many admirers already."—J. E. Pa.

"Tried the motor out Sunday and it is all you claim for it. In fact it has more power and speed than the —— or ——."—E. S. L. N. Y.

Names of parties giving these voluntary testimonials will be supplied on request.

DEALERS

We have an interesting, liberal sales plan. The market for outboard motors has only been "scratched". The Spinaway will meet any competition — price within reach of almost everyone. Your investment is small. Write for sales plan today.

Read this Liberal Guarantee

We unreservedly guarantee Spinaway performance and stand solidly behind every detail of its make-up.

All Spinaway parts are interchangeable and we will replace free of charge any part which develops a defect due to faulty material or workmanship, or from any cause other than ordinary wear, neglect or abuse, provided such part is sent back to us transportation charges prepaid.

We are able to make this offer because in quality of materials, in character of construction and in perfection of mechanical adjustment, the Spinaway Motor is only approached in the very finest of marine engines.

Spinaway Boat Motor Co.

Owned and Controlled by Hoefer Mfg. Co.

280 So. Chicago Ave., FREEPORT, ILL.

Spinaway
Boat Motor Co.,
280 So. Chicago Ave.,
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Send me full story and complete specification sheets of Spinaway Detachable Row Boat Motor. If interested in dealer proposition check here.....

Name .....

Address .....

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REVERSE
GEAR

The Only Reverse Gear with Built-in Rear Starter

A better gear that costs you less money. An all enclosed gear that includes a high-grade elevated rear starter. Quality and price considered, the best reverse gear value offered to-day.

The only reverse gear on the market that includes a rear starter built in as an integral part of the gear. All ready to be attached to your engine with minimum trouble and expense for installing. Open gears at correspondingly lower prices.

For 100 h.p. Hall-Scott

You will find the Syracuse Gear ideally suited for the purpose, and the price is right. We build Syracuse Gears to class from 10 H.P. to 100 H.P.

Write today for catalog and prices

Syracuse Gear Co.
Syracuse, N. Y.

Beebee Boats.

EBBEE Boats Comprise A Line Of Racing Hydroplanes, Special Runabouts And Stock Boats Whose Workmanship-Speed And Performance Is Guaranteed.

RACING HYDROPLANES
GENTLEMENS' RUNABOUTS
GOLD CUP RUNABOUTS

20Ft-0" V BOTTOM RUNABOUT —40 H. P. Kermath.

20Ft-0" FAMILY LAUNCH — 5 H. P. Kermath.....$750.00

18Ft-0" "PLAYBOY" LAUNCH— 3 H. P. Kermath.....$450.00

16Ft-0" "MOTO-ROW" — 3 H. P. Caille $250.00

16Ft-0" "BB" OUTBOARD BOAT $95.00

15Ft-0" DOUBLE ENDED ROW BOAT $75.00

Write for Complete Details

Sydney C. McLouth
Marine City, Mich.

Skipper and The Skipped

(*Continued from page 92*)

ceased save for a slight drizzle. The Mate and I spent practically the whole of that day fishing off the stern of the schooner and as a result we enjoyed fresh Tom-Cod and Sole with our meals.

That evening we cleaned and oiled our trusty weapons in preparation of the big hunt of the morrow.

Moose, the Mate explained to me—I know now that he must have been an enthusiastic reader of all sporting magazines—were very large animals and infested the Olympic Mountain region. This latter statement I know now to be absolutely false. To successfully slay one of these monarchs of the forest, the Mate went on to explain, one must use a very high-powered rifle.

The gun-rack of Grayling carried only three rifles: A Winchester .22, Remington .30-30 and a Winchester .38.56, the latter a regular baby Bertha for size and weight. The Skipper also wished to be included in the party and claimed that a .22 was "plenty big enough to pack aroun'."

The morning of the big hunt dawned bright and clear, with an invigorating tinge in the air that made hiking a pleasure. We left Spottie to stand watch aboard the schooner and, after first pulling the dinghy above the reach of the tide, struck off through the heavy timber which came down to the water's edge.

After about an hour's hike through the dense forest we came upon a rather well-worn trail which fairly bristled with the tracks of countless animals.

The Mate dropped to the ground and started to creep about on all fours, placing his old nearsighted eyes five or six inches above the sod, eagerly scanning the trail and loudly analyzing the history of each and every owner of the numerous tracks. "This one here is the spoor of a squirrel," he would say excitedly, "that one there is the track of a coyote, female, judgin' by th' size of 'em. This one here—Ah!" he started to scratch about the leaves like an excited hen looking for a worm, "This one here is th' spoor of a Moose, an' a d—n big one, too!" He traced the faint impressions with a gnarled forefinger.

"What gender, Slim?" asked the interested and impressed Skipper.

"Masculine," came the prompt retort.

"How do you figger that it's a he-Moose?"

"Simply 'cause this here pertic'lar Moose ain't cut his toe-nails for a long time, Stupid! Cain't yuh see the deep depressions left by the front toe-nails?" Neither the Skipper or myself could, so the Mate gave it up as hopeless, mumbling something about us "guys bein' city bred an' born."

"Regular Shylock Holmes, ain't he?" sneered the Skipper as Slim picked up his rifle and bade us follow in pursuit of the Moose.

Fifteen minutes later, according to my Ingersoll, we were still following the trail, with the Mate dramatically in the lead going through the same movements that an Indian probably used in stalking upon our fore-fathers back in 1494 Before Prohibition. Suddenly I was struck with a brilliant idea. "Hey, Slim!" I shouted after the intent Mate, "Why not lure the Moose towards us instead of trying to edge up to it?"

"Whatta yuh mean, lure it?" The Mate for some unknown reason failed to comprehend.

"Call it!"

"By Golly, I didn't think of that!" bubbled the enthusiastic Mate. "I sartin'ly should have known enough to have called it."

"He ain't gotta horn with which to call it," chimed the Skipper.

"Horn?" The Mate presented the Skipper with the so-called stony stare. "Who said anythin' about usin' a horn? Looka here, yuh flabbergasted ole hypocrite. I don't use any of these here artificial sort of doo dads when I calls a Moose! Sabe?"

"Is that so? Listen!" The Mate cleared his mouth of tobacco juice, coughed softly a couple of times and after posing in the manner of an opera singer, cupped his hands over his mouth and emitted a weird and seductive "MmmmoooOOO" which sounded very much like a cow that is afflicted with the colic.

"How do you like that?" he asked, after he had completed this performance for our benefit as well as the Moose's.

"Sounds like a nanny-goat," answered the Skipper.

"How in h——l are yuh goin' to call it then? This here 'Come Boss—Nice li'l Bossie' stuff don't go with a real, honest-to-goodness, live Moose, or the sportin' magazines is all wrong!"

"Is that so?" The Mate was really offended. "Wal, if yuh think that yuh c'n do any better'n that, try it! What do yuh think of it Buck?"

"It sounded very melodious to me, Slim," I answered.

"There yuh are!" There was a triumphant gleam in the old man's eyes as he turned toward the Skipper. "Is that proof enough or do you want—Listen!"

Far down the shadowed trail came the unmistakable answer to Slim's seductive call.

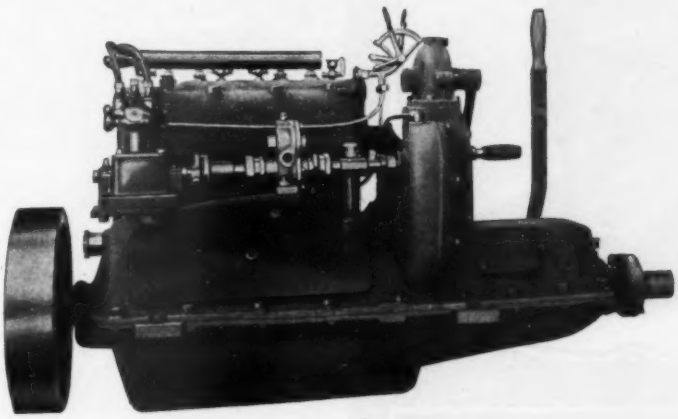
"A Moose!" gasped the astonished Skipper, and all three of us made a so-called swallow-dive for our weapons which we had so thoughtlessly placed against an old snag just off the trail.

(*Continued on page 98*)

Advertising Index will be found on page 130

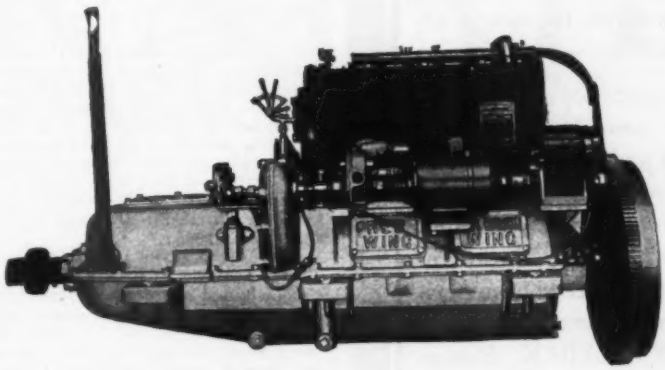
Red Wing Thorobred
THE MOTOR WITH POWER TO SPARE

MR. BOAT BUILDER



"BABY DOLL" 10-14 H. P.

You're sure of satisfied customers if you specify the Red Wing "THOROBRED." Many of the largest and most successful boat building firms in North America use the "THOROBRED" as standard equipment with unvarying results.



New Models F and B with pressure oiling system.
Paragon reverse gear running in oil bath.

You can't go wrong on a "THOROBRED." Five sizes, Model D 10-14 H. P., Model A 14-20 H. P., Model AA 18-24 H. P., Model F 28-36 H. P., Model B 32-40 H. P.

Furnished with or without electric starter. Send for descriptive catalog.

RED WING MOTOR COMPANY, DEPT. B, RED WING, MINN., U. S. A.

Eastern Distributors
Verrier, Eddy Co., 222 E. 42nd St., New York, N. Y., W. H. Moreton Corporation, 780 Commonwealth Ave., Boston, Mass., W. E. Gochenaur Mfg. Co., 631 Arch St., Philadelphia, Pa., Hutchinson Bros., Alexandria Bay, N. Y.

JOSEPH VAN BLERCK'S
LATEST ACHIEVEMENT
THE NEW VAN BLERCK ENGINE

New and improved features assuring utmost dependability and highest efficiency characterize the new VAN BLERCK ENGINE.

The major parts of the engine including the new oiling system, gasoline system and reversing mechanism are unusual and unique culminating in design perfection that, together with expert workmanship and the highest grade of materials in the entire construction, makes the new VAN BLERCK Engine Supreme in the Marine Field.

MAKE SURE YOUR NEXT BOAT IS VAN BLERCK empowered.

Write for complete details to

THE SEXTON MOTOR COMPANY
30 Church St., New York City

Sole Distributors

Skipper and The Skipped

(*Continued from page 96*)

Again came the distant bellow and there was no denying but that it was closer. The excited Mate moistened his lips and again the weird "MmmmoooOOO" broke the gloomy stillness of the forest. As an echo came the answering call. This performance was repeated over and over again and each time the answering bellow drew closer. Soon we heard the snapping of twigs as the Moose came crashing down the trail. Trembling with excitement we breathlessly awaited the coming of the Monarch.

Around the bend in the trail smashed a huge brown animal and simultaneously four rifles flashed to our shoulders. Bang-Bang-Bang-Bang-Bang-Bang! For a moment it sounded as though another World War was in progress.

The Moose pitched forward, tried to kick a hole through the atmosphere and lay very still. The firing continued until we had run out of ammunition. We rubbed our aching shoulders and surveyed our kill.

The next moment the pure air was tainted with the vulgarity of three different tongues. *OUR MOOSE WAS A DOMESTIC BULL!*

We heard excited voices from down the trail and conscience-stricken, we obeyed the Skipper's command to "beat it" and made ourselves scarce in that vicinity.

That evening, just as we were about to heave anchor, we were honored with the presence of two distinguished visitors: the Sheriff of the County and an old farmer whose whiskers fairly bristled with anger. Something—probably the much-heralded sixth sense—whispered to us that the old owner of the deceased bull had arrived.

The Sheriff was the first to break the ominous silence. "You are all under arrest," said he casually.

"Under arrest." The Mate was an admirable actor. "Could we bother yuh as to th' charge placed against us?"

"For disturbin' the peace, huntin' without a license and for shootin' and killin' this here man's perfectly innocent Holstein Bull." He nodded toward the farmer.

"That all?" asked the Skipper.

"That all?" The farmer was by now a raving maniac. "Why, yuh gosh-derned imputent scoundrel, ain't it enough? It be murder! Understand? MURDER! An', by th' great horned-toad, ye'll sojourn in th' hoose-gow for it! Napoleon, Gawd have mercy on his dear soul, was the best bull this side of Hollywood an' I had just got through payin' twenty-five dollars for him! He ——" The old fellow went on to give us a minute description and a brief biography of the dead and departed Napoleon.

"Hush, Grandpop! Throw off th' cut-out." The Mate, who was as old if not older than the ancient farmer, attempted to use diplomacy. "We'll give yuh thirty-five dollars for Napoleon, who, Gawd have mercy on our souls, was needlessly exterminated."

But the farmer was evidently of Jewish descent. "Fifty dollars or sojourn in th' cooler f'r fifty days an' nights!" spoke he.

"Forty dollars an' we'll be kind an' considerate enough to give yuh t' hide an hoofs," bargained the Skipper.

"Forty-five dollars or the lock-up!" piped the farmer.

"She's sold! Buck, paige forty simoleons," announced the Skipper. "Between Slim and I we might be able to raise that other five smacks."

"Sure," echoed the Mate, "it was he who wanted to go Moose huntin', anyway!"

Slowly and almost broken-heartedly I reached into my pocket for my wallet. I frankly believe that I could have murdered the Mate in cold blood had it not been for the very near presence of the Sheriff. Forty dollars is more money than I am able to save in a year of Sundays and here I was compelled to give it to some miserly old farmer all because of the Mate's utter stupidity. I counted out the required sum from my rather meager roll of bills and, together with the five dollars, which was the crews donation to this worthy cause, handed it to the Sheriff, who, much to our surprise as well as the farmer's, took twenty dollars of it and handed the balance to the former owner of the deceased Napoleon.

"Commission, eh?" was the Skipper's sardonic remark as the Sheriff neatly folded his share of the plunder and placed it in his bulging purse. The firm Upholder of the Law grined widely as he stepped nimbly into the dory in which he and his client had rowed out to the anchored schooner.

A little off-shore breeze was blowing and at the Skipper's order the Mate strode forward to hoist sail and heave anchor. Slowly Grayling turned about and, under the Skipper's guiding hand, proceeded out into the bay.

When we reached the open sea the Skipper called me into the cabin. "Buck," said he, "there is no reason why we should stick to this shore like a cootie to a flea-bitten mare. I don't fancy this idea of shootin' other people's perfectly innocent Gottstien bulls and having to pay just twice as much as the Gottstiens is worth, plus hide an' hoofs. Let's get away from here."

"Sure!" I ejaculated, "I was just about to suggest that we do. Swing her about and hit for Seattle on a run. I've got to go to work!"

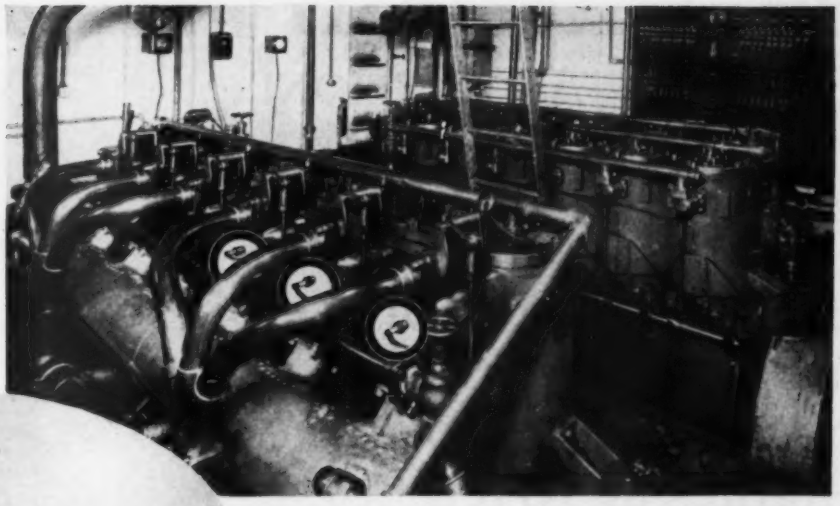
He did.

Advertising Index will be found on page 130

RAJAH

Equipped

of course



The handsome new 135-ft. cruiser "Alida" built for Bertram H. Borden of New York. Powered with two 6 cylinder 11" x 12" Speedway engines equipped with Rajah Spark Plugs.

RAJAH
SPARK PLUGS

For eighteen years Rajah Spark Plugs have been regular equipment on Speedway Motors, considered by many the finest marine motors made. For eighteen or twenty years and more Rajah Plugs have been used exclusively by many boatmen who were lucky enough to discover Rajah goodness years ago.

Why? You must buy them yourself to understand. When you discover Rajah quality nothing else will do.

Spark plug troubles in the aggregate mar the pleasures of thousands of boating hours. It is a little thing to cause so much annoyance, especially when you can buy immunity for the cost of one set of Rajah plugs.

Decide now to enjoy the utmost freedom from spark plug delays. Provide your motor with a full set of Rajah Plugs.

If your dealer doesn't sell genuine Rajah Spark Plugs, order direct from us stating thread wanted.

For fine boats and all others it's worth while to equip your spark plug cables with the famous Rajah Terminals. One Rajah Thumb Nut Terminal free with each Rajah Plug. Standard Rajah Terminals, 10c. each. Solderless Rajah Terminals, 15c. each.

Standard Rajah Plugs $1.00
Giant Rajah Plugs $1.25
Waterproof Rajah Plugs $1.25

Rajah Thumb Nut Terminal

Manufactured by

RAJAH AUTO SUPPLY CO., Bloomfield, N. J., U. S. A.

DEALERS AND BOAT BUILDERS—ATTENTION!

We shall announce in January important changes and improvements in our four-cycle and two-cycle engines up to ten horse power.

We shall also announce a remarkable new rowboat motor—an outboard motor that will propel a boat wherever it will float, regardless of rocks, snags or other impediments and without damage to the motor.

We suggest that dealers in open territories be prepared to consider our franchise—it will be valuable.

LOCKWOOD-ASH MOTOR CO.
2207 Jackson St. Jackson, Mich.

American Marine Motors for 1923

(Continued from Page 42)

Joseph Van Blerck Engine Corp., New York, N. Y.

N-121-MS	78	5½ x 6	4	4	1500	1497
N-122-MS	120	5½ x 6	6	4	1500	1890
N-123-MS	120	5½ x 6	6	4	1500	1890
N-124-MS	157	5½ x 6	8	4	1500	2287
N-125-MS	157	5½ x 6	8	4	1500	2287

Winton Engine Works, Cleveland, Ohio

Model	Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
W6	80	6½ x 9	6	4	500	5900
W5	125	8 x 11	6	4	450	10000
11	220	9½ x 14	6	4	400	19000
54A	135	7½ x 11	6	4	450	23000
W35	200	11 x 14	6	4	250	44000
W24A	350	12 15/16 x 18	6	4	225	64000
W40	450	12 15/16 x 18	8	4	225	90000

Wisconsin Motor Mfg. Co., Milwaukee, Wisconsin

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
24	4 x 5	4	4	1000	585
40	4¾ x 5½	4	4	1000	820
50	5.1 x 5½	4	4	1000	840
62	5¾ x 7	4	4	800	1290
60	4¾ x 5½	6	4	1000	1360
90	5¾ x 7	6	4	800	1565

Wolverine Motor Works, Bridgeport, Conn.

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
5	5½ x 6	1	4	500	600
14	6½ x 7	2	4	425	1545
22	6½ x 7	3	4	425	2285
32	7½ x 9	3	4	375	3914
40	5½ x 7	4	4	800	1800
42	8½ x 9	3	4	375	4130
60	9½ x 12	3	4	325	7000
80	11 x 12	3	4	325	7516
110	12½ x 14	3	4	325	12400
160	11 x 12	6	4	330	13600
200	11 x 15	6	4	330	17110

Wolverine Motor Works, Bridgeport, Conn. Heavy Oil Engines

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
46	8¼ x 11	2	4	350	8050
70	8¼ x 11	3	4	350	9825
95	8¼ x 11	4	4	350	11600

Outboard Motor Manufacturers

Caille Perfection Motor Co., Detroit, Michigan

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
2	2⅜ x 2½	1	2	700	65

Elto Outboard Motor Co., Milwaukee, Wisconsin

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
3	2¼ x 2	2	2	1400	50

Evinrude Motor Co., Milwaukee, Wisconsin

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
2	2⅜ x 2½	1	2	800	72
2	2⅜ x 2½	1	2	800	68
2	2⅜ x 2½	1	2	800	50
4	2⅜ x 2½	2	2	1200	80

Johnson Motor Co., South Bend, Indiana

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
2	2 x 1½	2	2	2300	35

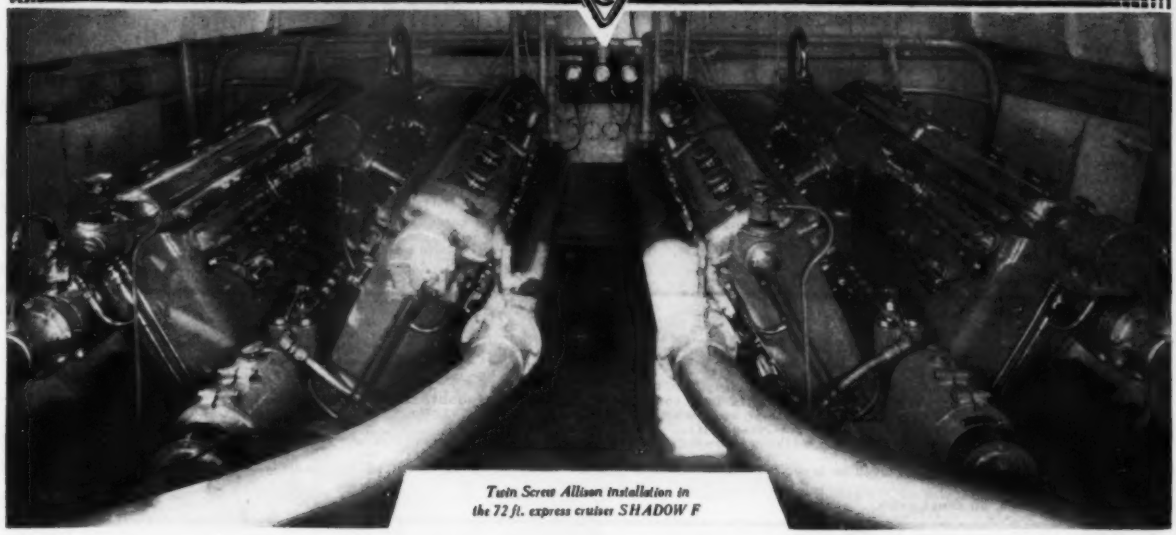
Lockwood-Ash Motor Co., Jackson, Michigan

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
2	2⅜ x 2½	1	2	1000	50

Spinaway Boat Motor Co., Freeport, Illinois

Horse Power	Bore and Stroke	No. of Cylinders	Cycle	R. P. M.	Weight
2	2⅜ x 2⅜	1	2	1200	58

Advertising Index will be found on page 130



Twin Screw Allison installation in the 72 ft. express cruiser SHADOW F

ALLISON

An Exceptional Power Plant for Exceptional Motor Yachts

THE Allison was designed to make it possible to build high speed express cruisers and runabouts of 50 to 80 feet having the same reliability as slower boats powered with heavy duty motors. This motor gives heavy duty reliability at 1500 R. P. M. and delivers 425 H. P. at that speed.

It is safe to say that the Allison is the last word in marine motor engineering. It is the product of unlimited skill and infinite care, with each unit, each operation, each accessory planned and developed by experts in their respective lines. For example the engineering staff of a leading accessory manufacturer devoted months to the production of a special carburetor for the Allison.

This motor is built for the yachtsman who can afford the best. Neither quantity production nor competitive selling is desired. The price of $25,000 insures perfection in each motor produced and this price is warranted by the results obtained in service as well as by the cost of production.

Catalog sent on request to boat builders and buyers.

ALLISON ENGINEERING COMPANY

INDIANAPOLIS . INDIANA

MoToR BoatinG's Ideal Series

Books of Plans of Cruisers, Runabouts, Auxiliaries, and Dinghies

THE BEST HOW TO BUILD SERIES EVER PUBLISHED

Volume I

Designs of Ideal Motor Boats and How to Design a Motor Boat

This volume describes in detail how to design a motor boat. It also contains complete plans of 30 Cruisers, Runabouts and Auxiliaries. The plans include lines, table of offsets, interior plans, profiles, construction details, etc. There is no book published at the present time which describes in everyday language the details of designing a boat according to your own tastes. The plans of Ideal Cruisers, Runabouts and Auxiliaries are complete in every particular. They include the best of the plans published in MoToR BoatinG during the past several years. The plans include boats of from 20 feet in length up to 40 feet. The drawings are all to scale and large size.

Foreign Postage, 50 cents extra. **$2.00**

Volume II

How to Build Sixteen Ideal Motor Boats

This book gives complete information for building the following boats:
16-foot mark boat, 12-foot outboard motor boat, 12-foot speed boat, 12-foot bangabout, 13-foot sea skiff, 16-foot sharpie, 18-foot runabout, 20-foot monoplane, 20-foot hydro-runabout, 20-foot knockabout, 20-foot tunnel stern, 22-foot V-bottom runabout, 25-foot V-bottom cruiser, 25-foot round-bottom cruiser, 28-foot cruiser (Consort II).

Every article is fully illustrated with working drawings and no information or instructions are missing which would be of assistance to the novice to build his own boat.

All of the Ideal Books are printed in large type on extra fine paper. They have been edited by Charles F. Chapman, Editor of MoToR BoatinG.

Foreign Postage, 50 cents extra. **$2.00**

Volume III Ideal Series

Twelve Complete V-Bottom Designs

By William H. Hand, Jr.

Plans Prepared Expressly for MoToR BoatinG

This new book is the most valuable ever published for the amateur builder or anyone desiring to have a V-bottom boat built by his own builder.

The plans contain outboard profile, lines, inboard, construction and interior arrangement plans, sectional views and complete table of offsets. Accompanying each design is a description of the boat and a full set of specifications taking up step by step each feature of the boat's construction, how it should be built and the proper material to use.

Plans and specifications of the following boats are included: Edith, a 15-foot runabout; Jane, an 18-foot runabout; Katherine, 20-foot cruiser; Dorothy, a 25-foot runabout; Zenith, a 25-foot cruiser; Cyclone, a 36-foot auxiliary; Eclipse, a 40-foot express cruiser; Magnet, a 28-foot cruiser; Tornado, a 45-foot auxiliary schooner; Broncho, a 29-foot cruising runabout; Shark, a 21-foot utility runabout; Claire, a 36-foot express cruiser.

Price of Twelve Complete V-Bottom Designs **$2.00**

Foreign Postage, 50 cents extra.

Volume IV Ideal Series

Twenty Easy-to-Build Motor Boats

By William J. Deed and others

A New Book of Small-Boat Plans and How to Build Them

These plans have been prepared especially for MoToR BoatinG and are complete in every particular. They are in detail enough to permit building from direct, either by the amateur or professional builder. No part of the boat's design or construction has been omitted or slighted.

Read the contents: Chum, a 16-foot Motor and Sail Craft; a 9-foot Easy-to-Build Dinghy; Nomad, a 34-foot Cruiser; a 9-foot Sharpie; Porpoise, a 20-foot Auxiliary Cat Boat; Kingfisher, a 14-foot Fishing Skiff; Shrimp, a 25-foot Hampton Boat; Flattie, a 16-foot Utility Boat; Dolphin, a 34-foot Tunnel Stern Cruiser; a 9-foot Dory; an 8-foot V-Bottom Tender; Penguin, a 25-foot Auxiliary Sloop; Sea Gull, a 41-foot Auxiliary Schooner; Whale, a 20-foot Cruiser that's a Real Cruiser; Tarpon, a 29-foot Raised Deck Cruiser; Alligator, a 28-foot Tunnel Stern Cruiser, a boat that will run in water little deeper than a heavy dew; and Mud Turtle, a 36-foot Stern Wheel Motor Boat. Rookie, a 20-foot Auxiliary Sloop; Nautilus, a 40-foot Tunnel Stern House Boat; Victory II, the Cruising Champion; Complete Bills of Material for Building.

Book is printed in large type, on fine paper, and handsomely bound in cloth.

Price of Twenty Easy-to-Build Motor Boats **$2.00**

Foreign Postage, 50 cents extra.

Price of all four books of Ideal Series (Vols. 1-4) if ordered together **$6.00**

Foreign Postage $1.00 extra.

Volume V Ideal Series

Piloting, Seamanship and Small Boat Handling

By Charles F. Chapman

This book has been published in response to repeated requests for us to bring out in complete book form the wonderful illustrated course in Piloting, Seamanship, and Small Boat Handling which has been appearing regularly in the issues of MoToR BoatinG since February, 1921.

Profusely illustrated with nearly 300 Cuts and Diagrams.

MoToR BoatinG's Correspondence Course proved to be the most successful and most popular feature ever undertaken by a boating magazine. Thousands of readers became better boatmen by studying this course. Now you will want it in permanent book form to keep aboard your boat for reference and guidance.

This course was prepared with an entirely new idea in text book or correspondence instruction. Instead of page after page of dry text matter with only occasional illustrations, it is composed mainly of pictures, drawings, photographs, charts and diagrams covering every situation and every point, with the purpose of each picture clearly explained by a concise and simple title.

You will find this book more enjoyable and easier to understand than any text book you ever read. You will find it correct and authoritative because it has been prepared by experts with years of boating experience and every necessary reference at hand.

You will find it easy to read and easy to remember because each chapter is reviewed by pertinent questions which reveal your understanding of the lessons.

Price of Piloting, Seamanship and Small Boat Handling **$2.00**

Foreign Postage $1.00 extra.

Note:—Volume V is not sold in combinations with the other books of Ideal Series.

MoToR BoatinG, 119 W. 40th St., New York, N. Y.

Advertising Index will be found on page 130

Look Ahead!

Before long you'll again enjoy glorious vacation days, wonderful week-ends at the waterside. Will you lose half the sport of these outings, a slave to oar and paddle?

Plan now to buy your Evinrude at the first call of Spring. With this husky little motor clamped to your rowboat or canoe you're through with oar-work. A fling of the fly-wheel and you breeze away to neighboring yacht club or distant anchorage. It's the ideal power-plant for dinghy or tender.

The Evinrude offers ten years of dependable outboard motor service. Talk to any of the 140,000 Evinrude owners and you will make no other choice. And remember, there's only one *genuine* Evinrude—*the* Evinrude.

There are two models of the genuine Evinrude—the Standard and the Lightweight. See these motors at your sporting goods or hardware dealer's. Or write for free catalog.

Evinrude Motor Company

770 Evinrude Bldg., Milwaukee, Wis.

DISTRIBUTORS:
69 Cortlandt St., New York, N. Y.
780 Commonwealth Ave., Boston, Mass.
440 Market St., San Francisco, Calif.
211 Morrison St., Portland, Ore.

EVINRUDE Standard and Lightweight

DETACHABLE MOTORS FOR WATERCRAFT

Next time you have to crawl out from under and get one more open-ender, remember this, A COES Wrench always fits, it always holds, and one of them will fit more assorted nuts than a double-handful of open-enders.

Ask Your Dealer

COES WRENCH COMPANY WORCESTER MASS.

"The CAPITOL"

MARINE UNIT POWER PLANT

COMPLETELY ENCLOSED — COMPLETELY EQUIPPED

If you own or are planning the kind of a runabout or cruiser that deserves a really excellent power plant, you should know more about the Capitol.

There isn't a smoother, quieter running marine engine. Vibration and noise are eliminated by perfect balance, wide-faced helical-cut timing gears, force feed lubrication, ball bearing universal joint, three point suspension, and many other improvements.

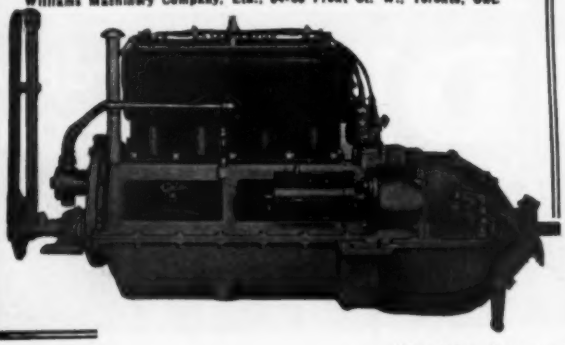
Delco ignition, Atwater-Kent two-unit starting, lighting and generating system, Willard storage battery, Stromberg or Schebler carburetor, instrument plate and all other necessary equipments of highest grade.

Stroke 5½"
Bore 4½" High Speed Model 60-65 H. P. at 2000 R. P. M.
Medium Speed Model 30-34 H. P. at 1000 R. P. M.

Write today for complete description and prices

AUTO ENGINE WORKS, St. Paul, Minn., U. S. A.

Eastern Representatives: Ventnor Boat Works, Atlantic City, N. J.; Fred C. Ducloa, Alexandria Bay, Jefferson Co., N. Y.; Gray-Aldrich Company, Inc., 84 Atlantic Ave., Boston, Mass. Canada: The A. R. Williams Machinery Company, Ltd., 64-66 Front St. W., Toronto, Ont.



Yard and Shop

(Continued from page 46)

Frisbie to Have Florida Service Station

About the beginning of December, service and sales headquarters will be opened by The Frisbie Motor Company in Ft. Lauderdale, Florida. The man in charge will be Frederick Busch, who is well known to a good many southern engine owners because of his previous experience in those waters.

Mr. Busch is a graduate of the University of Rochester, has been with the Packard people, is a graduate of the Navy Gas Engine School at Charleston and the Columbia University Gas Engine School. He also spent three years on the other side with Admiral Simms in charge of the Admiral's barge and a Sea Sled carried on the flagship. Mr. Busch has had considerable other experience in the service department of the Van Blerck Motor Company before joining the Frisbie organization. Although his first consideration will naturally be Frisbie owners, the Frisbie Motor Company will be very glad to be of any service possible to any other engine owners for whose convenience the manufacturers may not have established Florida service.

British Engineer in America

Engineering Production, a standard British engineering publication, has sent A. I. Davey, a member of it's Editorial staff to America with a free hand to visit and describe the most interesting plants and their methods. His series of articles will cover numerous manufacturing plants, their products and details of equipment. The first article of the series appears in their issue of September 21, 1922 and covers the production of Buffalo engines. The description of the shop and tools is very complete and the author pays a very high compliment to the manufacturers on their methods of production. When asked why he selected the Buffalo engine he merely stated the success of the Buffalo engine abroad led him to believe the readers of his publication would be more interested in close-up views of the Buffalo factory than anything else in America.

Lectures Of Interest to Yachtsmen

On the approach of a new winter season the regular lectures on navigational subjects, conducted by the various squadrons of the United States Power Squadrons, Inc., will be again arranged. These lectures cover the entire subject of small boat handling and rules of the road, and are a complete course in elementary navigation. These are being planned in various sections of the country. The Huguenot Power Squadron of New Rochelle is arranging its course to be held at some central point in the city of New Rochelle beginning in January. The Potomac Squadron will probably hold its classes at the Corinthian Yacht Club in Washington, D. C. The New Haven Power Squadron will begin its lectures about the beginning of December, while the Brooklyn Power Squadron will probably hold its classes early next year. At the Patapsco River Squadron classes are being held on the second and fourth Friday of each month at the Maryland Yacht Club, while on the first Friday classes in the advanced grade of Junior Navigators are being held. The Delaware River Squadron holds its classes every Wednesday night and all of these lectures are being followed with great profit by many yachtsmen in the respective localities.

Kermath Engines Still Going Strong

In the correspondence received by the Kermath Manufacturing Company are many letters which recite the virtues of their engines. A recent letter from James Kirshner tells of the behavior of a 1912 model Kermath in his boat Elk. It won the race of the Cobweb Yacht Club, to, and around Rockland Light, this fall. A fifty mile run made in quick time. In addition on a vacation cruise on Long Island Sound the engine was always on the job. He concludes by saying that he used to hear about the wonderful engines in years gone by, but that now he is in a position to tell a similar story.

Speejacks Returns To U. S.

The world cruising yacht Speejacks, which started out last spring on a tour around the world is due to arrive at Miami, Florida, on the morning of Thanksgiving Day, November 30. The time of arrival has been rather closely figured by the owner, A. Y. Gowen, but it is expected the boat will keep to her schedule. Speejacks, it will be remembered is a 98-foot yacht built by the Consolidated Shipbuilding Corporation last winter and which started on its long voyage shortly after being completed. Several reports were received later that the yacht had been lost in the Pacific Ocean but these were found to be false.

(Continued on page 108)

Advertising Index will be found on page 130

MATHIS YACHT BUILDING CO.

Another Constant Keynote - ECONOMY

Economy, as applied to houseboat building, is a two-sided proposition. One is economy of *construction*; the other, economy of *operation*.

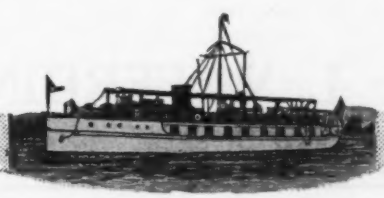
Too often the first of these is impressed upon the prospective houseboat owner in terms of price. An apparent saving in construction cost as reflected in a lower price is very likely to become the direct cause of an abnormally high operating expense later.

For years, one of the foremost features of all Mathis-built boats has been their remarkable economy of operation. This can have its beginning only in the correct construction of the proper plans. Real economy of construction demands Mathis skill or equal — there can be found no better.

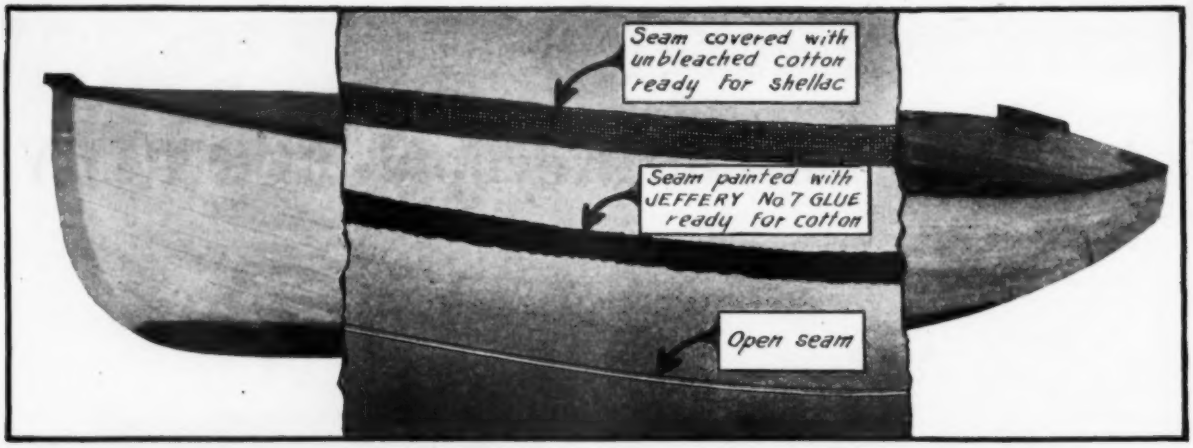
MATHIS YACHT BUILDING COMPANY

Specialists in Houseboats and Cruisers from 40 to 120 feet

Cooper's Point **Camden, N. J.**



HOUSE BOATS AND YACHTS



DOES YOUR BOAT LEAK?

LET US TELL YOU ABOUT

JEFFERY'S

WATERPROOF

MARINE GLUE

The enlarged section of the above illustration shows how the hull seams of a boat can be treated when the owner does not care to go to the expense of covering the entire hull with cotton or canvas as recommended in our booklet entitled, "How to make your boat leakproof."

The lower seam is shown open, as usually is the case when a boat is laid up during the winter, the middle seam is shown painted with a coat of our Jeffery's No. 7 Marine Glue ready for the cotton fabric which is laid on the glue and ironed into it with a warm flat iron as shown on the top seam. The cotton is then given a coat of shellac and painted. When the job is completed according to these directions the patching strips can scarcely be detected.

We however believe and earnestly recommend that if a more permanent result is desired, the entire surface be covered with fabric, laid in our Jeffery's No. 7 Black soft quality Marine Glue. This treatment will insure a boat with a coat of paint once a year being absolutely watertight indefinitely.

Send for our booklets, "How to Make Your Boat Leakproof"
and "Marine Glue—what to Use and How to Use it"

JEFFERY'S WATERPROOF MARINE GLUE

In all the various grades

For sale by all Yacht, Boat and Canoe Supply Houses, Hardware, Paint and Oil and Sporting Goods Dealers.

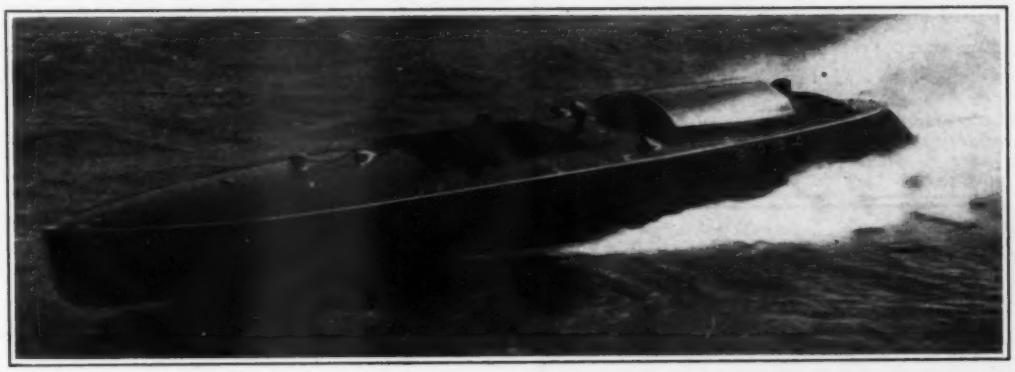
Tel-U-Where
Information Bureaus will tell you where it's sold

L. W. FERDINAND & CO.

152 Kneeland Street **Boston, 11, Mass.**

Advertising Index will be found on page 130

Hacker-Craft



WOODFISH, Owned by Mr. Edsel Ford, FASTEST DISPLACEMENT RUNABOUT IN THE WHOLE WORLD

WE ARE now in position to build a number of Runabouts for 1923, and will be glad to figure on that SWEEPSTAKES, GOLD-CUP, CLASS-BOAT, or SPECIAL BOAT. WE build only the highest class, and DESIGN, WORKMANSHIP, & Maximum results are absolutely assured.

MODEL—23.

Get full particulars on this new HIGH GRADE, HUSKY, DOUBLE COCKPIT Mahogany Runabout, before placing your order for 1923. The greatest value in such combination ever offered to date. Will seat six or eight comfortably. Controls from forward cockpit. Will take you anywhere. Powered with 50 H. P. Marine Motor, speed 20-24 miles. Electric starter and lighting. Windshield, and completely equipped. Must be seen to be appreciated.

Price complete F. O. B. Factory $2750.00

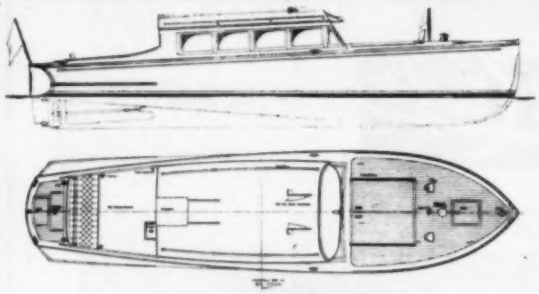
ALSO POWERED WITH PACKARD Single Six Motor. Price upon request. Twelve of these boats will be available for FLORIDA deliveries.

We have for immediate delivery a few of our 21 foot, and 26 foot standard outfits, with speeds of from 18 to 25 miles. Also, a few good used Hackercraft boats.

HACKER BOAT COMPANY

1525 CRANE AVE. DETROIT, MICH.

SEND FOR THE HACKER BOOK OF PLANS.
WE ARE PREPARED TO FURNISH PLANS FOR ANY TYPE OF RUNABOUT, DAY CRUISERS, AND REGULAR CRUISERS TO YOUR ORDER, UP TO 125 FOOT, and solicit correspondence.



THE 35′ SEDAN
IMMEDIATE DELIVERY

35′ x 8′-6″; speed 20 miles; mahogany decks, cabin and interior; toilet and galley. An exceptional boat that is sure to please the most exacting. Price $5,500 plus tax.

Our stock designs also include the following—

OPEN BOAT—35′ x 8′-6″ speed 20 miles, price $4,850 plus tax.
EXPRESS—35′ x 8′-6″ speed 20 miles, price $6,000 plus tax.
CRUISER—32′ x 8′-6″ speed 12 miles; double cabin with separate stateroom; 4 steel W. T. bulkheads; price $4,300 plus tax.
CRUISER—55′ x 13′-6″ speed 12 miles; twin screw; 4 W. T. steel bulkheads; pilot house; hot water heat; lighting plant; a boat that can be economically operated and maintained; price $13,950 plus tax.

It costs but two cents to find out about these boats.

Let us prepare sketches of your ideal boat and tell you what the cost will be.

Address
JACKSONVILLE BOAT COMPANY
7025 Clyde Ave. Chicago, Ill.
Shop, So. Chicago

FOR MANY SEASONS
MOST IMPORTANT
TROPHIES
OF PRECIOUS METALS
HAVE BEEN DESIGNED
AND MADE BY

J. E. CALDWELL & CO.

PHILADELPHIA

JEWELRY-SILVER-WATCHES-STATIONERY

Yard and Shop

(Continued from page 104)

On the Way South

Provision was made in a bond issue by City of Sanford, Florida, for the construction of a yacht basin which is to be constructed on the St. Johns River. This river, which is navigable for boats drawing a maximum of six feet will be dredged so that the channel will pass an 8-foot vessel. The actual construction on this basis will begin soon and all indications are that it will be completed in the early spring. This basin will accommodate many yachtsmen who cruise South each year and who desire to stop over for the St. Johns River

QUESTION ON LESSON NO. 9 GREAT CIRCLE SAILING

From Cape Race, Newfoundland to Anga Pt. Light, Tenerife, Canary Islands. Find by computation the great circle distance, and the initial and final great circle courses. Assume that you have sailed the initial course as a rhumb course for a distance of 250 miles, and then by a meridian altitude, find your true latitude to be 11′ S of the D R position. From the position then in, compute the new initial great circle course, and the distance to Tenerife.

Stock Boats for 1923

(Continued from page 44)

Lgth. Feet	Trade Name	Type	Beam Feet	Draft Feet	H.P.	RPM	Pro. Ins.	Speed M p h
12	Haertel	Flat	3-6	5	Out Board			
12	F. & S.	Outboard	4-0	6	3	1400		8
14	Haertel	Flat	3-8	6	Out Board			
14	Haertel	Vee	3-8	7	Out Board			
15	F. & S.	Open	5-0	18	5	700	16x12	8
15-3	Washington	Outboard	3-8	9	2			5½
16	Haertel	Flat	4-2	7	Out Board			
16	Haertel	Vee	4-2	7	Out Board			
18	F. & S.	Runabout	5-2	21	20	1200	16x20	19
18	F. & S.	Runabout	5-2	18	12	1200	14x12	11
18	Washington	Cruiser	5-4	14	4	450		7
22	Washington	Cruiser	6-10	19	6	500		8½
26	Washington	Cruiser	8-0	30	8	500		9
26	F. & S.	Runabout	6-2	26	150	1750	17x24	36
30	Washington	Troller	8-3	40	10	500		8½
32	F. & S.	R D. Cruiser	10-0	30	20	600	22x22	11
32	Washington	V-bottom	6-8	24	100	1500		22
32	Harrison	Cruiser	8-6	34	40	1000	22x18	12
33	Baby Gar	Vee	6-6	32	450	1600	18x30	55
33	Baby Gar	Vee	6-6	32	300	1500	18x30	45
36	Washington	Troller	9-3	48	14	410		9
36	Washington	V-Cruiser	8-0	33	100	1350		20
40	Washington	V-Cruiser	8-11	35	125	1200		22
40	Washington	Troller	10-0	54	20	400		9

Ventilation by Means of a Blower

(Continued from page 36)

out spending a day or two hauling everything out into the sun and airing out generally. I have known a yachtsman to acquire rheumatism from one trip of two months' duration, in a mouldy, damp cabin.

The wind motor should be made with brass arms and a conical maple hub. The hub is made in this shape so as to keep rain from driving into the blower. You can buy a six inch blower, which makes a neat installation for a boat of about twenty six feet. Drill the holes radially in the hub so that the arms drive in rather tightly. Now lay the assembly down on top of the blades which have been cut out and bent slightly, so that the arms will rest upon the convex side of the blades, which are made of very thin hard brass. When this is done and the arms touch each blade evenly, take a hot soldering iron and solder the parts together. You can get the pitch afterwards by turning the spokes in the wooden hub.

Braze a short length of bent brass or copper pipe into the outlet of the blower of such size that it will fit something over the short length which has been screwed into the threaded deck plate. I would advocate stay wires soldered to the center of the blade and fastened to the center of the hub for extra strength. If you install this ventilator over a bulkhead it will be easy to run the pipe down on each side to a tee at the floor, from which a short run of pipe runs fore and aft. This ventilator will not need to be secured, just drop it down over the short upright pipe and when you do not want to use it, lift it off. Mine has never gone overboard yet.—E. L. C., Winthrop, Mass.

Advertising Index will be found on page 130

YACHT BUILDERS

THE facilities for yacht building afforded by the great plant of the Newport News Shipbuilding & Dry Dock Company are without equal.

We specialize in furniture, wood carving and decorating for yachts. We also have special facilities and skilled workmen for reconditioning and repairing yachts as well as larger vessels such as the S. S. Leviathan which is now undergoing reconditioning at our plant.

The location of our plant at Newport News on Hampton Roads gives us a harbor free of ice at all seasons and next door to America's favorite cruising grounds.

Dolphin-180 ft. Diesel Yacht

The furniture of Dolphin was built in our own shops.

NEWPORT NEWS SHIPBUILDING & DRYDOCK CO.

YACHT BUILDERS AND SHIPBUILDERS

Plant Located at Newport News, Va. on Hampton Roads

New York Office Woolworth Building 233 Broadway

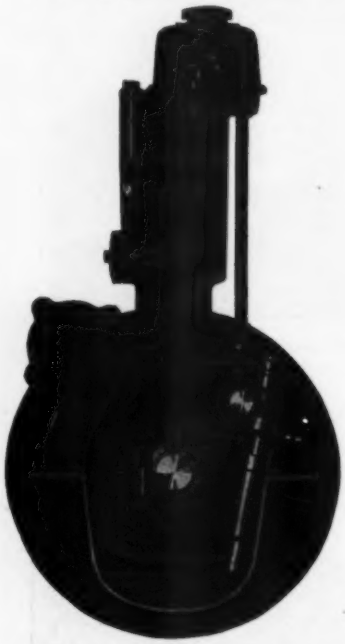
A Better Engine for Your Boat

Strictly Marine-Designed

Neat, compact, every moving part enclosed, you'll find the 1922 Gray as handsome and as efficient as any motor of its size ever built, regardless of price

THE 1922 Gray is neat in appearance, compact, and can easily and inexpensively be installed in runabouts 20 to 30 ft. in length; small cruisers up to 34 ft., also work boats.

Note the rigid one-piece base with Reverse Gear enclosed. The gear is automatically lubricated with positive gear pump that lubricates all other internal working parts of the engine—no grease cups or thick transmission oil used.



The splash lubrication is supplemented by force feed pump lubrication to all moving parts

Oil filler is conveniently located on *top of the engine* with duct leading to Crank Case. Rocker arm shaft is hollow and automatically supplies oil to Rocker Arms. Oil is forced under pressure to the three main bearings, and to the connecting rod troughs.

In brief, the Gray Oiling System leaves nothing to chance. It is unfailing at all engine speeds, and all oil is kept inside the engine, and not thrown around the boat or on its occupants.

The fly wheel is enclosed, affording safety and cleanliness. Bilge water cannot be thrown by the fly wheel. Every working part is enclosed; even the push rods. Due to the special design of the Cam Shaft, push rods and rocker arms, scarcely a sound can be heard with the ear close to the engine.

The smooth, quiet operation of the new Gray improved Valve-in-Head at all speeds from 200 to 2000 would compare favorably to an electric motor. It runs most economically on low grade gasoline and satisfactorily on kerosene.

Note The Big Crankshaft

The diameter of the main bearings are : Front 2¼". Center 2 1/16". Rear 2". The lengths are 3⅜", 2½", 2¼" respectively. Crankshaft is 40-50 point carbon steel forging, heat treated and ground.

Special attention is given to the balancing. The shaft is put in rotative as well as static balance on an Akimoff Dynamic Balance Machine, reducing vibration to a minimum.

Bosch Magneto with Impulse Starter, or Bosch two unit Starter and Generator is used.

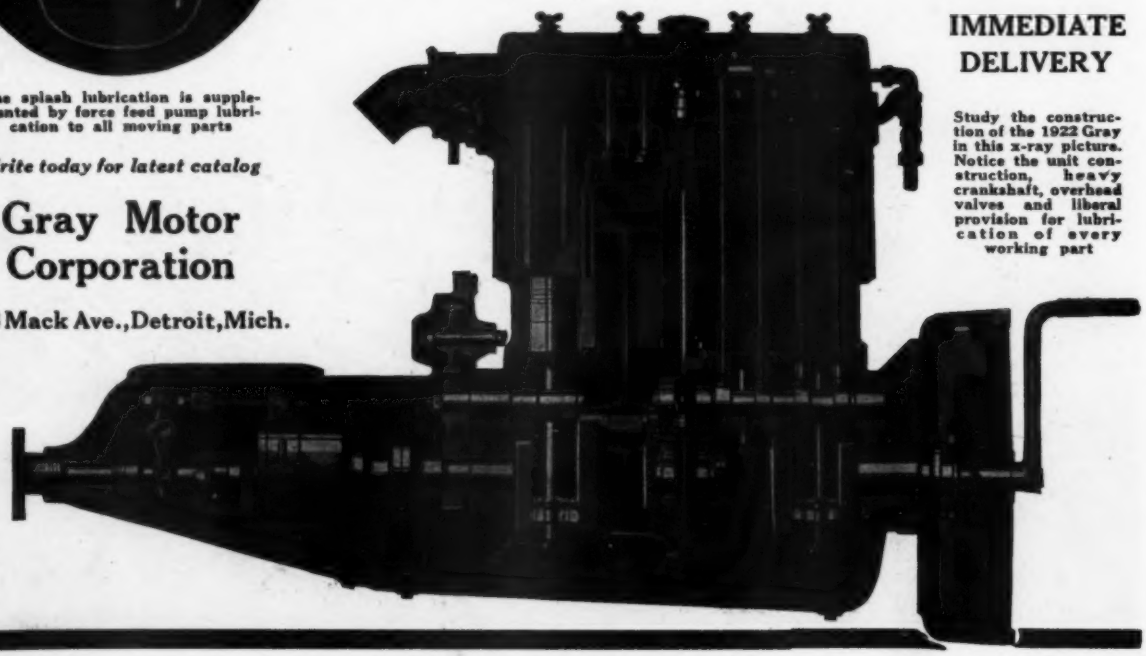
Gray Two-Cycle Motors are built in models from 3 to 8 h.p.

Write today for latest catalog

Gray Motor Corporation

2106 Mack Ave., Detroit, Mich.

IMMEDIATE DELIVERY



Study the construction of the 1922 Gray in this x-ray picture. Notice the unit construction, heavy crankshaft, overhead valves and liberal provision for lubrication of every working part

Advertising Index will be found on page 130

THE IDEAL POWER PLANT

OLE EVINRUDE'S LATEST MOTOR

Another big season has proved more conclusively than ever that the Elto Light Twin is the ideal outboard motor for yachtsmen and owners of large power boats.

The Elto is a smooth, quiet running "twin", never shakes the dinghy. It's the fastest outboard motor; has proved its ability to win against all outboard motors where stock models are raced. Runs at perfect trolling speed, too—it's the real fisherman's motor. Atwater-Kent ignition; motor starts instantly in any weather without spinning the flywheel. Weighs only 48 pounds, not too heavy to be comfortably portable, nor yet too light to stand, rough, hard usage. Rudder folds, and when folded the Elto is the most compact outboard motor; little space is required for storing away.

A rugged, durable motor, finest workmanship, the most beautiful motor in design and finish.

Write today, to Ole Evinrude's new organization for the Elto catalog.

ELTO OUTBOARD MOTOR COMPANY
Ole Evinrude, Pres.
Dept. F, Mfrs. Home Bldg., Milwaukee, Wis.

Elto
Light Twin Outboard Motor

48 Lbs.
3 H.P.

Elto Carrying Case

For Christmas

Give him a real He-Man Present! Something that he really wants.

Some fitting or gear for the boat that he has long felt the need of but never obtained.

A Marine Clock, Barometer, Compass, Log or one of the many other pieces of equipment to complete his outfit.

BOOKLET

To aid you in selecting we have prepared a booklet showing appropriate gifts with our best prices.

Send for it at once the time is short.

GEO·B·CARPENTER & CO.

MARINE SUPPLIES

Sailmakers and Riggers

200 W. Austin Ave. Chicago

GENUINE

HARTHAN

TRUE SCREW

PROPELLERS

The principle of a True Screw is strictly followed out in the patterns from which all genuine Harthan Propellers are made. This type is known to be the most efficient.

Harthan wheels are made of a special bronze composition, very tough and strong. This allows a very thin blade, the edges of which are brought down very sharp, which, with the extra high polish, reduces the power-absorbing element to a minimum.

We can supply propellers with two or three blades, in practically any pitch, either right or left hand.

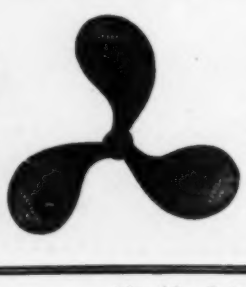
Look for the Trade-Mark on Each Blade

McFARLAND FOUNDRY & MACHINE COMPANY

1100 Willow St.,
TRENTON NEW JERSEY

Representatives

NEW YORK: Topping Bros., 123 Chambers Street.
PHILADELPHIA: F. Vandercherchen's Sons, 7 N. Water Street.



Some Dead Reckoning Pointers

(*Continued from page 39*)

At the time of taking departure, the patent log should be read and the time noted, and a record of the engine revolutions should be commenced, if that method is to be employed.

Compass errors and their correction.

Compass error and correction is generally dealt with under the subject of piloting, rather than as a part of dead reckoning. For a full treatment, the reader is referred to Commander Chapman's work on Piloting, Seamanship and Small Boat Handling, published by MOTOR BOATING. But compass correction in one form or another, comes into nearly every dead reckoning problem, and we shall therefore outline it briefly.

The so-called compass errors are not really errors at all. Instrumental imperfections, such as eccentricities in the graduation of the card, or failing to line up the card with the directions indicated by the magnetic needles, or improper centering of the pivot, would be compass errors in the true sense. But the term errors is a handy word, used to express the difference between the direction indicated by an accurate compass and the true geographical direction. The compass is a magnetic instrument, and it points in the direction to which it is guided by all the magnetic influences which surround it. These magnetic forces, in most places do not pull true North and South, with the result that the compass North, rarely points toward the true pole. But its failure so to do is not an error. On the contrary, it is correctly obedient to its environment. It points where it should point. Its direction is the result of combined magnetic influences. It is affected by the general magnetic forces of the earth, for the earth is a great magnet. And this general magnetic influence is modified by local magnetic forces, such as the magnetism of the vessel, or its cargo, and also by strange magnetic disturbances found in certain localities. Thus, the directions indicated by the compass may be the result of several component forces.

These commonly are:

1. Variation and
2. Deviation; and in some places
3. Local attraction.

Now dead reckoning is always computed in terms of true or geographical courses. Thus, the compass course must be freed of its errors and turned into a true course, before the dead reckoning problem is solved. Or, if a course is computed by dead reckoning, these errors must be allowed for, in finding the compass course which must be sailed in order to make good the true course computed.

1. Variation is the angle between the meridian (or true North and South) and the direction assumed by a free magnetic needle. By free needle, we mean one influenced only by the general magnetic forces of the earth, and free from local disturbances. If the North point of the free needle points to the West of true North, the variation is said to be Westerly; if it points to the East of North, the variation is Easterly. Variation has been determined by actual observations made at almost innumerable different places all over the globe. The results are indicated on the charts, generally by a magnetic rose on coast or harbor charts, and by isogonic lines, or lines of equal variation, on ocean charts. The number of degrees variation, and its character, as Westerly or Easterly, are indicated in the rose or alongside of the lines. Thus a notation of 15° W alongside an isogonic line, would mean that everywhere along the line, the variation was 15° Westerly, at the date of the chart. Variation is not constant, but subject to increase or decrease, generally, however, of but a few minutes of arc per year.

In dead reckoning work, an important point to remember is that the variation may change throughout even a single day's run, dependent upon the direction made good. For instance, leaving New York, with a variation of 10°W, and sailing Northeasterly towards Newfoundland, a run of 300 miles would introduce a change of about 7° in the variation; while if we were sailing Southeasterly toward Bermuda, we would carry a variation of about 11° West practically all the way.

The direction in which the compass points, when

(*Continued on page 116*)

Advertising Index will be found on page 130

TOBIN BRONZE

REGISTERED U. S. PAT. OFF.

For Underwater Parts

THERE is no question about the proper material to specify for the underwater parts of motor boats and yachts.

This point has been settled to the satisfaction of leading naval architects, engineers and boat builders during more than 30 years' experience with Tobin Bronze.

Resistance to corrosion, combined with great tensile strength and toughness, has made Tobin Bronze the recognized standard for underwater parts of all salt water vessels, from the motor boat to the ocean liner.

Tobin Bronze is best for shafts, struts, steady bearings, propellers, rudders, rudder stocks, hull plates, centerboards, fin keels, fastenings, etc. There is no satisfactory substitute for these purposes.

Tobin Bronze is manufactured solely by The American Brass Company.

Write for Booklet

THE AMERICAN BRASS COMPANY

GENERAL OFFICES, WATERBURY, CONN.

MILLS AND FACTORIES

Ansonia, Conn. Torrington, Conn. Waterbury, Conn. Buffalo, N.Y. Kenosha, Wis.

OFFICES AND AGENCIES

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Cleveland Cincinnati Detroit Chicago St. Louis San Francisco

ANACONDA AMERICAN BRASS LIMITED, NEW TORONTO, ONTARIO, CANADA

The Cruise *of the* Hippocampus

by

ALFRED F. LOOMIS

Now published Complete in Book Form

"THE Cruise of the Hippocampus" which originally appeared serially in MoToR BoatinG has now been published in book form by one of the country's leading book publishers. Unquestionably one of the finest cruise stories ever told, this book was written by a typical boat lover for typical boat lovers.

Perhaps it was Mr. Loomis' ability to visualize his audience through long acquaintance with the readers of MoToR BoatinG that enabled him to talk so intimately of the boating joys and boating trials he met with on this cruise. Starting from New York with two companions in a 28-ft. auxiliary yawl the author experienced about every variety of excitement and adventure there is to be found on a cruise of three or four thousand miles. The trip covered many points of interest down the Atlantic Coast, through the West Indies and across the Caribbean Sea to the Panama Canal.

You'll enjoy this book as proof of the possibilities of small boat cruising, and you'll enjoy it again just as a mighty good story. It presents the rare combination of an actual trip recorded by an interesting writer. There is no need to draw on the writer's imagination when typing his manuscript in the yawl's cabin in some distant port.

Alfred F. Loomis is a writer of real ability, with wide observation and long experience in the operation of small boats. As an officer on a U. S. sub chaser during the war he absorbed the traditions and atmosphere, which makes his writings an authentic picture of life on the sea.

Price $2.00

MoToR Boating 119 West 40th Street, New York, N.Y.

Single Surface Propeller Control

OF great interest to architects, builders and yachtsmen is the fact that it is now possible to use a single surface propeller drive. Dipping propellers as a means of boat propulsion were first invented as long ago as 1818, but it was not until Albert Hickman developed and patented the dipping propeller with a regulated dip, the surface propeller, that the dipping propeller became a practical means of boat propulsion. Today it is a matter of record that surface propellers have shown a superiority in speed and in efficiency over the submerged screw propeller in almost all classes of power boat.

Up to the present, the various Sea Sleds and the earlier Viper IV type (V-bottom surface propeller boats) have practically all been driven by twin, right and left hand, surface propellers, turning in opposite directions and designed to do away with the side thrust incident to the lower blades only being submerged.

With the double engined Sea Sleds this has been the simplest of all possible installations, as it still remains.

With single engined Sea Sleds, two surface propellers have also been installed, one propeller being driven by a gear transmission from the tail shaft line.

The first attempt made by Mr. Hickman to use a single surface propeller was in one of the early Viper IV type boats with an engine running at 900 R.P.M. maximum and the control was not satisfactory, nor was the efficiency high. The next use of a single surface propeller was in the step boat Rainbow II, licensed under the Hickman patents and with twin surface propellers operating behind the step amidships. Mr. Greening drove this boat with one surface propeller and with the boat in good steering control. Within the past two or three months, Mr. Hickman has been carrying out single surface propeller control experiments at the plant of the Sea Sled Company, Limited, West Mystic, Conn., the propeller being aft of the stern transom as in the ordinary Sea Sled, and requiring no structural complications. The control has now been so perfected that all results of side thrust from the submerged propeller blades has been done away with, and the boats can be steered either to starboard or port with as great ease as the best of the submerged screw propeller boats. There has been nothing more important in Sea Sled development since the invention of the original surface propeller, and Mr. Hickman is applying for patents covering the new controlling system.

With the relatively light weight of a single power plant and with the great lift at the stern of a Sea Sled, the engine can be placed far aft, leaving the entire center of the boat as a passenger space, and permitting the use of one cockpit in the center of the boat.

The propeller shafting is reduced to a minimum. In the case of the new standard 25-foot single surface propeller runabout which is being produced by the Sea Sled Company, the propeller shaft is only three feet long. In a submerged screw propeller installation with the engine in the same position, it would be necessary to drive forward to a gear transmission and thence carry the propeller shaft aft under the bottom of the boat, a complicated, expensive, heavy and noisy arrangement. In the case of the new Sea Sled drive, all gear boxes, universal joints and other such mechanical equipment is done away with.

For high speed displacement boats, where the engine must be placed aft for the sake of efficiency, the new single surface propeller drive is ideal, combining the simplicity and light weight of the short shaft installation with the high efficiency of the surface propeller with no shaft carried under water.

So far as the comfort of the passengers is concerned, the fact that all machinery can be placed aft and separated by a bulkhead from the passenger cockpit, removes the source of noise, vibration and oil smoke.

BUILD YOUR OWN BOAT from our K. D. frames

Sixty standard designs, the product of 20 years' experience, for you to choose from.
New plant of four times former capacity. Our new literature on knock-down boats sent on request.

DEFOE BOAT & MOTOR WORKS
1251 Jefferson St. Bay City, Mich., U. S. A.

Advertising Index will be found on page 130

Inverted V-bottom and Surface Propeller Boats.

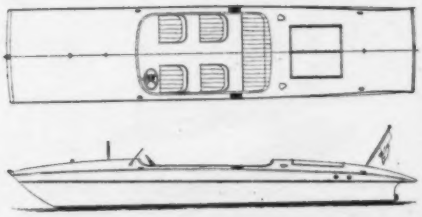
SEA SLED

Hickman Patent in all countries.

Trade Mark Reg. U. S. Pat. Off. Trade Mark Reg. Canada

TWO COCKPIT MODEL

Ideal For Southern Waters



SINGLE COCKPIT MODEL

New Single Surface Propeller Model with engine aft, the most radical change since the introduction of the surface propeller.

We announce the accomplishment of an absolutely successful single surface propeller drive

THE 25′ Standarized Sea Sled Runabout offers in a variety of arrangements the best possible boat for use in the south. There one body of water will in places be deep and rough, shallow and with marine growths. No boat other than a Sea Sled can be at the same time fast, seaworthy, shallow draft, and have the ability to operate through heavy weed growths.

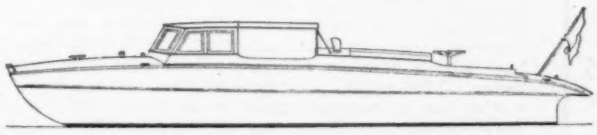
These double planked mahogany boats, equipped with the Hall-Scott 125 H. P. engines, electrically started, will give you that same reliable service you obtain with a high grade motor car. Thirty miles an hour guaranteed with the open models (they actually are much faster) and even with the heavy enclosed bodies they are only slightly less speedy.

Attention is particularly invited to the one cockpit model which uses for the first time the new single surface propeller drive. This permits of the engine being way aft, having all of the passengers located ahead of the motor in one sociable group in that part of the boat which is the driest and has the minimum amount of motion.

At the prices at which they are offered they represent the greatest fast boat value on the market, possible only through standardization. The open models, two cockpit type, one cockpit type, combination yacht tender and sport type, are priced at $6250.00, the coupé at $6750.00. (All prices are net, exclusive of tax or preparation for shipment, delivery at our plant.)

In order that you may enjoy the greatest possible number of hours of comfortable, fast, dry boating pleasure this winter, speak for *your* Sea Sled now.

For those who row or loll along with an outboard motor there is the Sea Sled Dinghy, in three sizes, incomparably the most remarkable of all small boats.



COUPÉ MODEL

COMBINATION YACHT TENDER AND SPORT MODEL

The Sea Sled Company, Ltd., West Mystic, Conn.

STEARNS-McKAY
MARBLEHEAD
ANTI-FOULING GREEN BOTTOM PAINT
FOR STEEL OR WOOD
STAYS CLEAN

For Racing and Cruising Yachts and Vessels

Increases speed, saves fuel and large expense bills. A hard and peculiar slippery finish which lasts a long time. It pays for itself many times over by eliminating costly repairs, scraping and repainting work. It is a powerful wood preservative and anti-fouler, and is equalled only by Copper Sheathing as a protection against Teredos.

MARBLEHEAD FULL AND SEMI-ENAMEL
YACHT WHITE FOR TOPSIDES

Advice and consultation free on all painting and repair work.

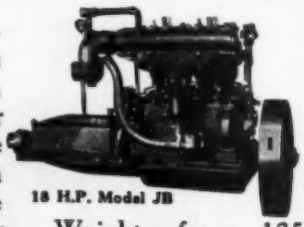
STEARNS-McKAY MFG. CO
MARBLEHEAD MASS. U.S.A.

REGAL

PRICES AGAIN REDUCED

Established More Than Twenty-two Years

LOWER manufacturing cost enables us to quote much lower prices for REGAL four-cycle engines. Made in sixteen sizes, one to eight cylinders. Weights from 135 pounds to 8500 pounds. Made to operate with gasoline or kerosene.



18 H.P. Model JB

REGALITE ¾ kw. air cooled lighting plants for homes and boats. Write for catalogue.

REGAL GASOLINE ENGINE CO.
74 West Pearl St. Coldwater, Mich.

Some Dead Reckoning Pointers

(*Continued from Page 112*)

influenced only by variation, is called the magnetic course.

2. Deviation is the error of the compass induced by the magnetism of the vessel and its cargo. It is the amount the magnetic course is thrown out by magnetic influences in the ship. Like variation, it is named Easterly or Westerly. Methods of determining its character and amount may be found in works dealing specially with the subject. The principle of all these methods is the same. The magnetic course is determined, in one manner or another, and compared with the compass course, and the difference between them is attributed to deviation. We must remember that deviation is a characteristic of each particular vessel; and is not constant, but may change from time to time, and may be much affected by the character of the cargo. Thus, a deviation card worked up when the vessel carried a cargo of cotton, might be worse than none on a later voyage, when the cargo was iron. Again, the deviation differs with the heading of the vessel. On one course, there may be none, on another it may be East, on still another, West.

3. Local attraction is a more uncommon error, because it is felt in comparatively few places on the earth. It is supposed to be caused by local masses of magnetic substances, which are of sufficient power and near enough to the surface of the water to affect the compass, and confuse its performance. In parts of the Great Lakes, these local disturbances are marked, and they have been found in the West Indies and elsewhere. But, happily, they seem to have kept away from the waters of our Atlantic coast. We would search for information concerning them in Coast and Ocean pilots, and be guided where possible by local knowledge.

However forbidding, these errors may seem, they are ascertainable; and by properly applying them, the results given by the compass may be substantially freed from their influence, and true courses obtained or made good.

The corrections for both variation and deviation are applied in the same manner.

Starting with the compass course, or, as they say, "going from compass to true", we have:

Compass course±deviation=magnetic course
Magnetic course±variation=true course

Going from true to compass, we have:

True course±variation=magnetic course
Magnetic course±variation=compass course

The rules for making the application may be stated in a sentence, but will then be understood by no one, who is taking his first shot at it. In the entire field of navigation, there is nothing more confusing to the student than the rules for applying variation and deviation, and any attempt to elucidate them seems to end in a maze of words. Yet the matter is simplicity itself when once grasped. To those who may find the subject difficult, the writer would make these suggestions:

1. Learn how to box the compass thoroughly, by points and quarter points. You will always have trouble in applying corrections unless you can visualize the card.

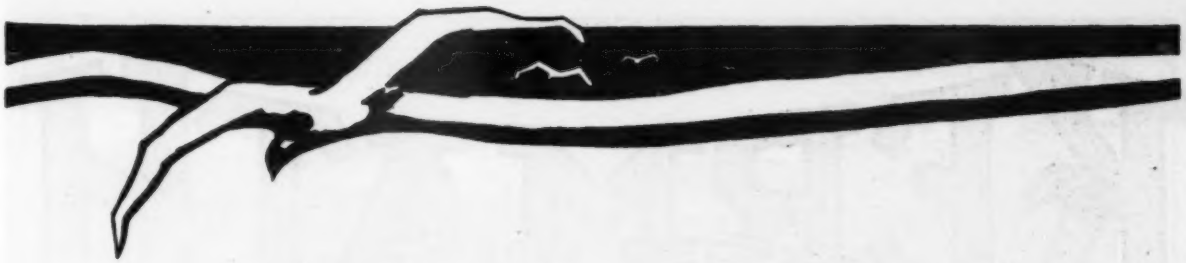
2. Take a chart, any chart will do, and imagine it to represent the earth, or a portion of it, as in fact it does. Spread it out. Note the meridians running North and South and the parallels East and West. These are true geographic directions. If you are standing on the chart and looking about you, your horizon is geographic and any lines and directions you may draw are true. Perhaps the chart will have a true compass rose printed upon it. So much the better. That shows your true courses.

3. Cut out a compass card from some publication or advertisement, or draw one on bristleboard and say to yourself, "This is my compass; it is not true, it is magnetic. It is affected by variation and deviation. It points North but that is not geographic or true North. Suppose where I am there is one point of Westerly variation. Now if I put this card on my chart or earth, and fancy its North to be drawn one point toward the West, in what direction will it be actually pointing?"

Now place the card on the chart, preferably in the centre of the true compass rose printed thereon, and turn its North one point to the left or toward West. Then

(*Continued on Page 122*)

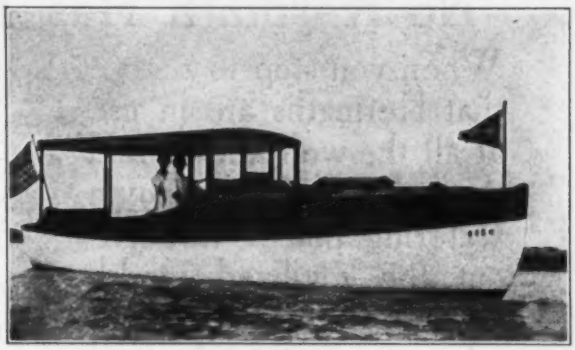
Advertising Index will be found on page 130



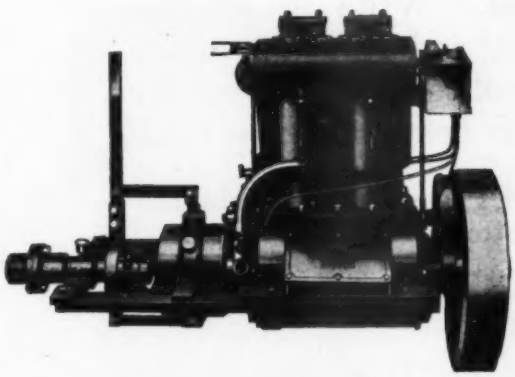
Frisbie
VALVE-IN-HEAD
MOTOR

Flywheel Under Water—Frisbie Plugs Right Along

ON a cruise to Maine sometime ago, the Mattie was caught in a gale. At times the flywheel was under water, but the motor plugged right along, never missing an explosion.



This graceful 26 ft. cabin cruiser is the Mattie, owned by F. E. Mosher, Charlestown, Mass., who is "more than pleased" with her 10 H. P. Frisbie Motor.



Model B, 2 cyl., 10 H. P.

There are 13 Frisbie Models, 1, 2, 3, 4 and 6 cylinders, 4¼ x 5" and 6" x 6", ranging from 5 to 100 H. P.

Some Motor!

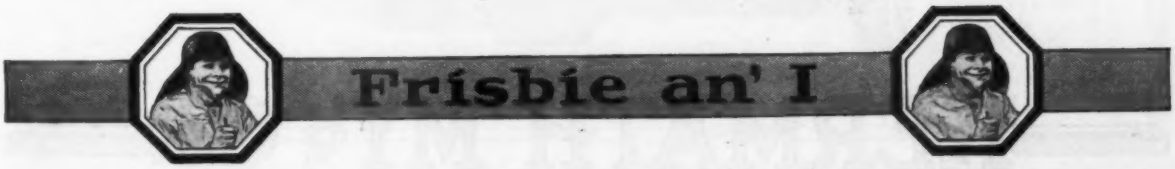
SAYS MR. MOSHER

"I am more than pleased with it, and feel that any one who installs a Frisbie will have the same satisfaction. I think it is the best and most economical motor on the market today, and I have had several other machines."

We will gladly send full description of the complete Frisbie line to any one interested.

Frisbie Motor Co.,

7 COLLEGE STREET,
MIDDLETOWN, CONN.



KERMATH

A KERMATH MARINE MOTOR ALWAYS RUNS

No Kermath Has Ever Worn Out

When you stop to realize that Kermaths are in use at all the well known and thousands of the unknown watering places throughout the civilized world, you can better understand what a very popular and highly practical motor it is. Wherever you find power boats you find Kermaths and you find them giving the best service—efficient, economical and always dependable.

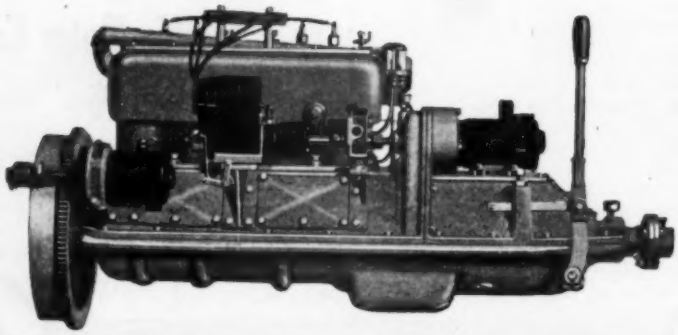
Hundreds of these Kermaths have been in use for years and years, and not one to our knowledge has ever worn out.

We have a Kermath for you and your type of boat. Now is the time when you should be investigating motors and getting your boat in first class shape. Possibly we can give you some pointers on your boat. Write us all the facts and possibly we can be of some help to you on your boat. Dept. D

3 H.P. to 40 H.P. Marine Motors.

$135 — $1550

Quality Right
Design Right
Materials Right
Workmanship Right
Prices Right



This most complete line of marine engines is an ideal line for a dealer to sell. Write us for our detailed catalogue and territory.

KERMATH M'f'g Co.

DETROIT 5880 Commonwealth Avenue **MICHIGAN.**

Advertising Index will be found on page 130

"PLANK WITH CYPRESS AND YOU PLANK BUT ONCE."

A Runabout or a Cruiser.

Plank her with non-rot, non-warp, genuine

"TIDE WATER"

CYPRESS

"THE WOOD ETERNAL"

"OF COURSE"

For all marine use SPECIFY "ALL-HEART" GRADE. It assures the boat owner satisfactory service in the highest degree.

He will be immune from the annoyance and expense of oft-recurring repair bills, which take the joy out of the sport of motor-boating. "Plank with Cypress and you plank but once." Send for

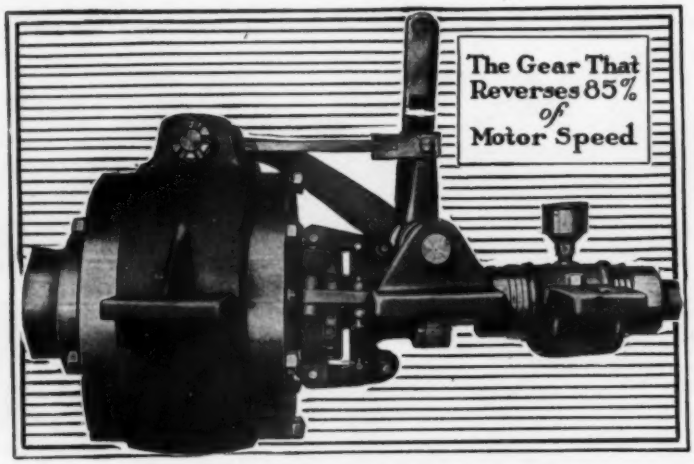
FREE BOOK *Volume 19*, of the famous Cypress Pocket Library, and get *all the facts* about the good properties of Cypress, the best lumber for boats, big or little. Also ask for Volume 1, with complete Government report. Address:

Your local dealer will supply you. If he hasn't enough **Cypress** let us know at once.

SOUTHERN CYPRESS Manufacturers' Association

1317 Poydras Bldg., New Orleans, La., or
1317 Graham Building, Jacksonville, Fla.

Insist on "tide water" Cypress—you can identify it by this mark:



Stearns Motor Manufacturing Co. Puts It Up To Old Man Joe

Their engineer, Mr. G. F. Swarthout, writes:
"Will say that I am thoroughly sold on your gear. Our recent dynamometer tests show a considerable reserve capacity; we have set your No. 141 gear in a power plant capable of exerting a torque of 325 foot pounds at 925 RPM and it picks this load up very comfortably with only nominal pressure on the plates, which is very gratifying.

This means that the gear we recommended, a No. 141 Duplex Drive, transmitted the full power of the motor, which is about 6½ H.P. per 100 RPM. The results of this rigid test fully proved to Mr. Swarthout that Joes Gears would meet the requirements of their motor at full speed and power under all conditions. This is why the Stearns people have adopted Joes Gears for all their motors.

So Do:

Miamus
Kahlenberg
Clay
Nelseco
Dodge
and many more

put it up to old man Joe

The Snow & Petrelli Mfg. Co., 156-B, Brewery St., New Haven, Conn.

JOES DISTRIBUTORS AND SERVICE STATIONS

New York—Sutter Bros., 44 Third Ave. Service Station foot of E. 92nd St., Brooklyn.
Philadelphia, Pa.—W. E. Gochenaur Mfg. Co., 631 Arch St.
Baltimore, Md.—Unger & Mahon, Inc., Pratt & Gay Sts.
Detroit, Mich.—Henry H. Smith & Co., 232 Jefferson Ave., East.
Cleveland, Ohio—Wm. F. Meier, 1433 W. 77th St.
Chicago, Ill.—W. L. Masters & Co., 229 North State St.
New Orleans, La.—Arthur Duvic's Sons, 130 Chartres St.
Southern California—Fellows & Stewart, Inc. Wilmington.
Seattle, Wash.—Pacific Marine Engine Co.
Toronto, Canada—A. R. Williams Machinery Co.
Montreal, Canada—E. Drolet, 137 McGill St.
Newfoundland—John Baron & Co., 241 Water St., St. John.
New Brunswick, P. E. I.—T. McAvity & Son, St. John, N. B.
England—J. King & Co., 10 Church Row, Limehouse, E., London.
Turkey—Societe Generale d'Automobiles, Constantinople.
Argentine, S. A.—J. Banham & Sons, Buenos Ayres.

JOES FAMOUS REVERSE GEARS

REVERSE 80%-88% of MOTOR SPEED

Advertising Index will be found on page 130

LARGE SERIES

Model MAU 4 ¼ x 6 ½"
35-60 HP at 600-1200, $1275.00

Model MDU 5 ⅛ x 6 ½"
40-75 HP at 600-1200, $1340.00

Model MDR, spec. high speed
100 HP at 1600, $1450.00

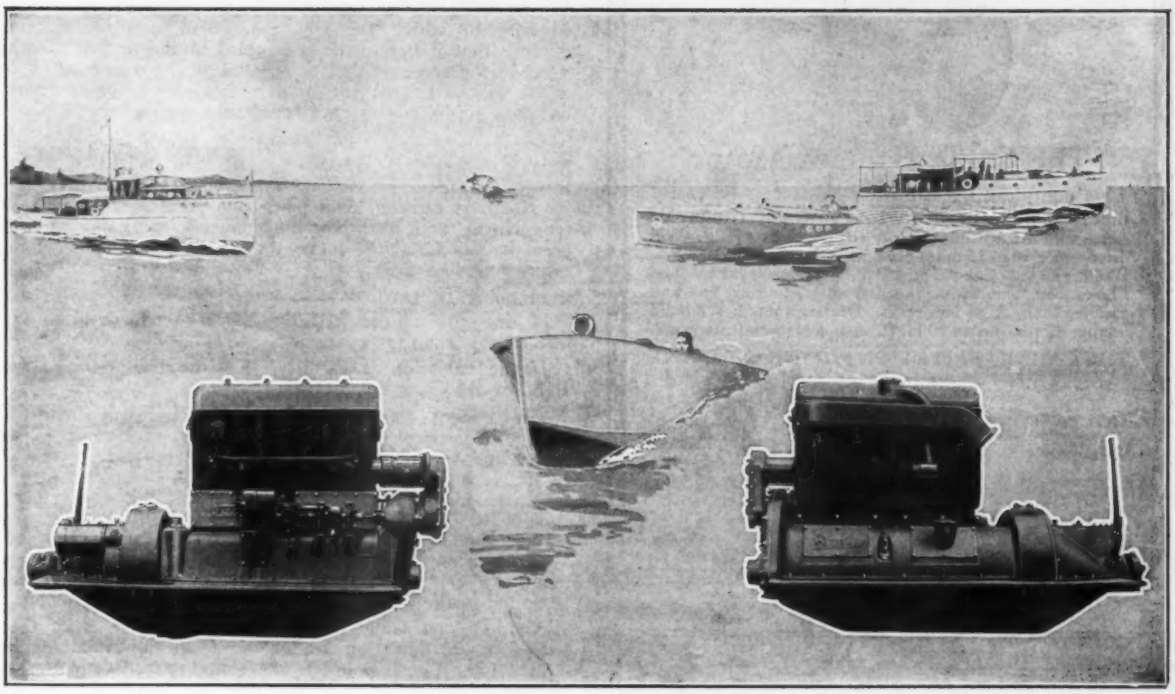
EXTRA RESERVE STEARNS MARINE ENGINE

SMALL SERIES

Model MGU 4 ¼ x 6"
25-45 HP at 600-1200, $1140.00

Model MHU 4 ¼ x 6"
30-55 HP at 600-1200, $1190.00

Model MHR spec. high speed
60 HP at 1600, $1250.00



Quality Never Lowered to Make a Price

THE certainty of performance, the long and uninterrupted service for which the STEARNS is particularly noted, tell the boat owner of today what he most wants to know—the value that is built into the marine engine.

Such things foretell what he will be getting from his engine a year or five years and more after he buys.

They imply not only the lasting satisfaction which the STEARNS owner enjoys, but they also attest profound manufacturing skill, and shop practices which assure the quality to make a marine investment worth while.

When an engine embodies unusual engineering achievement; when it is the product of economical manufacturing; when it yields the unbroken service which STEARNS owners prize so highly, can more conclusive evidence of value be supplied?

Yet, to find an approximation of the qualities which give the STEARNS EXTRA RESERVE its high standard among fine marine engines, it is necessary to seek engines *in a much higher price range.*

The buying public today appreciates these things—how keenly, is affirmed by the growing interest in the STEARNS, and the feeling that, under the direction of Stearns' engineers, still better and greater things are to be expected.

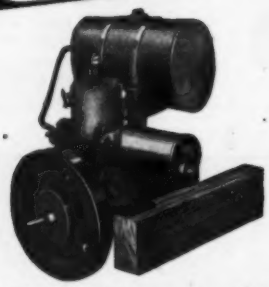
Money Never Bought More in a Marine Engine

STEARNS MOTOR MANUFACTURING COMPANY
LUDINGTON, MICH.

DISTRIBUTORS

Bowler, Holmes & Hecker Co., Inc., 259 Greenwich St., New York City
Fellows & Stewart, Inc., Wilmington, Calif.
Wm. F. Meier, 1433 W. 77th St., Cleveland, Ohio
Stauffer, Eshleman & Co., New Orleans, La.
W. L. Masters & Co., 229-231 N. State Street, Chicago, Ill.
Deans' Sunnyside Pleasure Boats, Limited, Toronto, Canada
H. G. McLaughlin Company, 809 Railroad Avenue, Seattle, Wash.

CAILLE DETROIT



The Caille Bantam Motor

This complete little power plant can be easily installed by yourself in your rowboat, dingey or canoe with a few common tools. It develops 2 H. P. Will drive canoe 10 to 15 miles per hour—rowboat 7 to 10 miles. Weight, 40 lbs. Compact design. Measures 9¾x12 inches. Comes complete with propeller, shaft, stuffing box and gasoline tank. Send for details. Dealers wanted. We build marine motors up to 20 H. P. Ask for special literature.

THE CAILLE PERFECTION MOTOR COMPANY
412 Caille Bldg Detroit, Mich.

Bearcatting in Florida

THE Belle Isle Bearcat is by all odds the finest run-about you can select for use in Southern waters this winter.

Unlike most high-powered, fast craft of its type, the Bearcat may be throttled down to less than 300 R.P.M. for hour after hour of deep-sea trolling. Without the motor missing a stroke, the speed may be accelerated to 35 miles an hour in a few seconds, for the run back to shore.

Of utmost importance is the fact that the Bearcat's 125-hp Hall-Scott Marine Motor is built with cast-iron cylinders that are impervious to the injury that results when salt water passes through the cooling system of steel-cylinder power plants.

Florida orders should be placed at once. Prices, 4-cyl. Bearcat, $6,500; 6-cyl Bearcat $7,500. Other models from $1,150 up.

Belle Isle Boat & Engine Co.
9662 E. Jefferson Ave. Dept. B, Detroit.

Some Dead Reckoning Pointers

(*Continued from page 116*)

observe that the North point of the compass points toward N x W on the chart, or, shall we say, N x W true. "Oh pshaw!" you say, "Anyone can see that!" But hold on! What you are after is the name of the point on the true card or rose to which the compass North is directed. You want the name of the true point so that you can go into the traverse table and work out a problem. Now as you call off the name of the point on the true card or rose to which the compass North is directed, you observe that it lies on the true card to the left of North. That is, the name of the true course on the true rose, or N x W, to the left of the point indicated by the magnetic compass, or N, as you read it off on a compass card.

If you turn your card so that its North is drawn one point to the right or toward East, then its North points to N x E on the true rose. The compass says North, but its North is directed to a point one point to the right of true North, and, as I box the compass, the name of that point is N x E. Now comes the conventional and troublesome rules:

In going from compass to true:

If the variation is westerly, the true course is to the left of the compass course.

If the variation is easterly, the true course is to the right of the compass course.

The student reads the rules and straightway imagines a lot of true circles and magnetic circles erected upon the globe, and sees the true North straight up and down and to the right, and not to the left, of the magnetic north, and concludes that the rule is crazy and the whole thing is a mess. The fact is that, for the sake of brevity, the conventional rules have been unfortunately worded. What is meant, is that if the variation is Westerly, the name of the true course, *as read upon a compass card*, will be found to the left of the course indicated by the compass.

Another confusing thing results from the fact that variation and deviation are named from the North point. Thus, if the North point of the compass is drawn toward the West, the variation is Westerly, as above stated. But the compass card is a solid affair. It all goes around together. Thus, while the North point is drawn toward the West, the Southeast point is drawn toward the East and the Southwest point is drawn away from the West! And yet if you will clap your card on the chart rose and turn its North one point to the West, you will see that every point of it is directed to a point on the true rose, the name of which will be found on the card, one point to the left of the course indicated by the compass.

Again, in speaking of a point as being to the left or right, we must fancy ourselves to be standing in the centre of the compass and looking out toward the horizon. If we face South, and our card is drawn around toward the East, it is none the less drawn to the left and its North point is drawn toward the West and the error is Westerly.

If we had the temerity to phrase new rules for compass correction, we might put them in this fashion:

1. Fancy yourself to be standing at the center of the compass, looking in the direction of the ship's head:

2. If the compass error is Westerly, the name of the true course will be read on a compass card at the left of name of the course indicated by the ship's compass.

3. If the compass error is Easterly, the name of the true course will be read on a compass card at the right of the name of the course indicated by the ship's compass.

To illustrate:

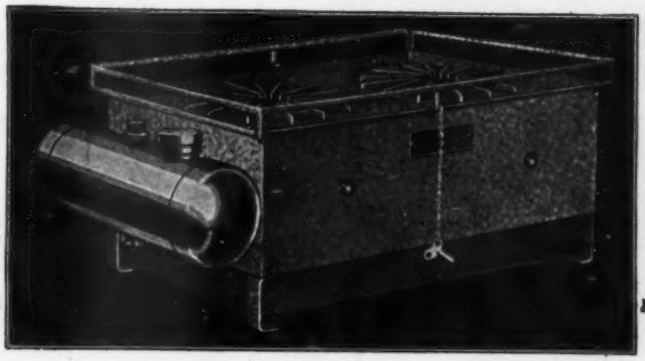
1. Compass course, N, error, 1 pt W, true course N xW, which on the card is 1 pt to the left of the compass course.

2. Compass course N, error, I pt E, true course N x E, which on the card is 1 pt to the right of the compass course.

3. Compass course, S E, error, 1 pt W, true S E x E, which, on the card, is 1 pt. to the left of the compass course.

(*Continued on page 126*)

Advertising Index will be found on page 130



The big factor—*safety!*

THE danger of fire aboard your motor boat is minimized by Auto-Galley-Kook-Kit—the galley stove that is scientifically and mechanically perfect. Every detail is worked out along the lines of perfect safety from fire or explosion. Every negligence is guarded against. That's why many experienced builders of America's best boats in adopting a standard galley stove equipment, chose the

GALLEY Auto KOOK KIT
TRADE MARK

Made in several sizes—especially for marine use—this sturdy little stove occupies very small space. Only the best of materials are used in Auto-Galley-Kook-Kit. Severe tests are given each stove before it leaves the factory. Burns ordinary motor gasoline with a strong steady, blue flame that a thirty mile wind cannot blow out.

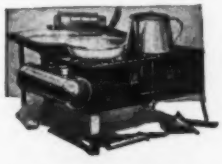
YOUR boat should have the Auto-Galley-Kook-Kit—for safety's sake.

Handled by all the leading marine supply houses in the principal Atlantic and Pacific Coast cities.

SPECIFICATIONS

Two Burner Model—(above)

Size, 20¼" x 10½" x 5½", legs 2" high, body made of galvanized iron, strongly riveted; all fittings galvanized or of copper or brass; tank made of seamless drawn brass, carefully tested; has rail around top to prevent utensils from sliding off. Equipped with a full sheet of galvanized iron for covering of table or bench on which stove is mounted. Has slots for legs to fit into. Pump and a funnel with each stove.
Price, complete.....$20.00



Auto-Kamp-Kook-Kit

Auto-Kamp-Kook-Kit is made of sheet steel, strongly riveted, with a chocolate brown baked enamel finish. The tank is of polished brass, with pressure gauge, and fully tested. Has master burner and detachable key handle. Burns ordinary gasoline. A thirty-mile wind cannot blow it out.
Price, complete with equipment..$15.50
Price, without equipment.....$13.50

Auto-Galley-Kook-Oven

Every owner of an Auto-Galley-Kook-Kit should have an Auto-Galley-Kook-Oven—the most efficient, most satisfactory camp oven on the market. When open for use, Auto-Galley-Kook-Oven measures 12x11x11 inches, but by the clever arrangement of joints and hinges, folds up to 12x11x2 inches, and the total weight is only 5½ lbs.
Fits over one burner of the Auto-Galley-Kook-Kit—bakes and roasts perfectly—occupies very little space when folded—light, compact, efficient.
Price, comp. $4.50

PRENTISS-WABERS STOVE CO.

General Offices and Factory
108 Spring Street, Wisconsin Rapids, Wisconsin

REPRESENTATIVES

Chicago, Ill.
Mr. W. AL. TREAT, 190 N. State St.

Los Angeles, Cal.
Mr. H. M. WATERMAN, 1311 S. Figueroa St.

Dallas, Texas
MR. GEO. E. VICKERS, 411 N. Mont Clair St.

Portland, Ore.
Mr. F. H. CROWN, 1121 Gasco Bldg.

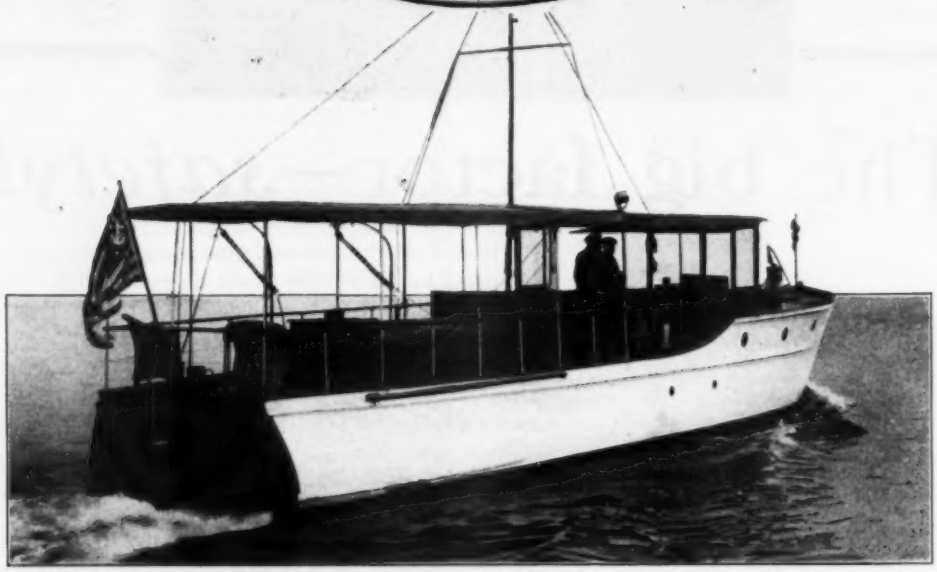
Denver, Colo.
SPRAKE SALES CO., 304 Charles Bldg.

New York, N. Y.
Mr. CHAS. G. JOHNSTON, 98 Park Place

CANADIAN BOAT & ENGINE EXCHANGE, 43 Yonge St., Toronto, Ont., Canada

Show Your Stern

With Scripps Pep



Alice C. owned by Mr. Jas. MacKenzie, Jersey City, N. J. 58' X 12'. E—6 Scripps Motor

Alice C is 58' X 12' and travels 14-¼ miles per hour

YOU'LL admit it takes some real power to drive a big 58 ft. cruiser through the water at better than 14 miles. That is just what the SCRIPPS E-6 does for her ladyship "Alice C". With 58 ft. of solid comfort, roomy accommodations and plenty of beam, she isn't built for speed—but accomplishes it just the same. Many a vaunted express cruiser will never see anything but the stern of Alice C.

Think of it! Nearly a sixty footer—over 14 miles—with a motor that costs only $1750.00 complete, including electric starter. There's no apology for the price—in fact we're a trifle proud that we can deliver SCRIPPS quality and the incomparable smoothness of a six cylinder power plant at such a low price. But then, SCRIPPS is born in the Motor City where manufacturing is a fine art, and every second man you meet on the street is an expert machinist or a production specialist.

E—6 Medium Duty 40-60 H. P. High Speed 65-100 H. P. $1750. including electric starter.

Ever since the SCRIPPS crossed the Atlantic in a thirty-five footer back in 1912, and negotiated the Niagara Rapids in 1911, the world has known that the SCRIPPS stands for reliability. The world is now amending its opinion to include power, speed and economy in the highest degree.

Your boat will be a better boat with a SCRIPPS. Let us tell you why, also why we have sold more SCRIPPS engines this year than ever before in 17 years of experience. 10 H.P. to 100 H.P. Gasoline or kerosine.

Catalog on request.

Scripps Motor Company

5819 Lincoln Avenue **Detroit, Mich.**

Advertising Index will be found on page 130

QUALITY SNAP RINGS

"Last to Last"

Easy to Install
Quick Seating
Long Lived
Accurate

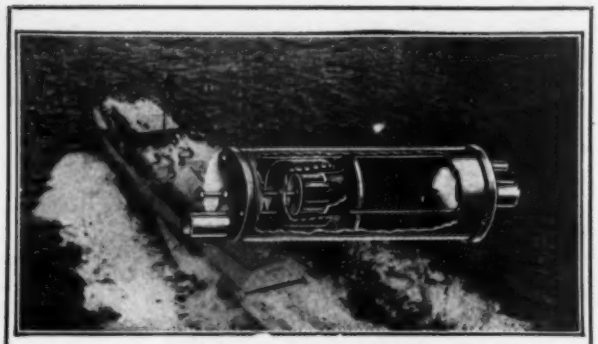
MORE than 60 leading manufacturers have adopted QUALITY piston rings for initial installation.

All Jobbers and Dealers should be able to visualize the enormous replacement market for QUALITY piston rings and keep well stocked.

More Than a Million a Month

THE Piston RING COMPANY

MUSKEGON, MICH.



"Whippet" Oliver G. Jennings, N. Y. C. owner, Equipped with two 400 H.P. Murray & Tregurtha engines with Tvedt Silencers.

SILENCE your ENGINE EXHAUST

without loss of power from BACK PRESSURE

If engine exhausts were effectively silenced the pleasures derived from motor boating would be much greater. Boat Owners who are using the Tvedt Silencer enjoy the pleasures of "quiet" without loss of power by back pressure in the Silencer. Tests of engines equipped with the Tvedt Adjustable Silencer have conclusively shown no loss of power. This is the only Silencer that can be adjusted to your individual engine when it is installed.

Write for catalog and full information.
Help eliminate objectionable exhaust noise.
Made for Engines of one to twelve cylinders.

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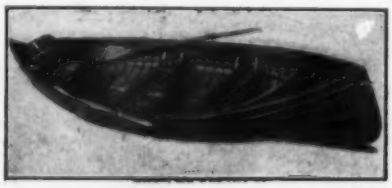
SKANEATELES BOAT and CANOE CO.

Established 1893



Boats that will last!

For Rowing, Sailing and Outboard Motor

Write for our catalog

38 Jordan St. Skaneateles, N. Y.

Some Dead Reckoning Pointers

(*Continued from page 122*)

4.	Compass	Error	True C
	S S W	1 pt W	S x W
	N W x W	1 pt E	N W
	49°	7° E	56°
	139°	3° W	136°
	211°	3° E	214°
	296°	5° W	291°
	S 16° E	6° W	S 22° E
	S 83° W	14° E	N 83° W
	N 27° W	39° E	N 12° E

When courses are given navy style, the rule is simple and universal:

Going from compass to true:
Westerly error, deduct
Easterly error, add

If the card be graduated the old way, from North and South, towards East and West, we must remember that, in some quadrants, the error will be added and in others subtracted. But the fact remains that Westerly error is always applied to the left, and Easterly to the right.

The foregoing rules relate to the conversion of compass courses into true courses. When a true course is found by dead reckoning, it must be turned into a compass course before it is sailed. This is done by the reverse process from that above explained. If the true course is to the left of the compass course, then, conversely, the compass course must be to the right of the true course. Thus in going from compass to true, we apply:

Westerly error to the right
Easterly error to the left

When there is both variation and deviation, the algebraic sum is applied. That is, if both are of the same name, as both West or both East, we add them together and apply their sum. If they are of different names, one West, the other East, we apply their difference.

In making the conversion of courses, a tabular form such as the following is helpful:

Convert the following compass courses into true courses:

C C	Var	Dev	Total Error	T C
S S E ¼ E	1 ¼ E	½ W	¾ E	S x E ½ E
N W x W ½ W	¾ W	½ W	1 ¼ W	W N W ¾ W
347°	19° E	2° W	17° E	4°
S 79° E	17° W	3° E	14° W	N 87° E

Convert the following true courses into compass courses:

T C	Var	Dev	Total Error	C C
S S W ½ W	1 ¾ E	¼ W	1 ½ E	S x W
W ¼ N	1¼ W	½ W	1¾ W	W N W
139°	21° W	5° E	16° W	155°
N 59° W	3° E	7° W	4° W	N 55° W

Leeway is the angle between the fore and aft line of the vessel and the course made good over the land, caused by the effect of wind and wave. The result of leeway is that the vessel goes through the water in a direction different from that indicated by her compass, which presumably is set true with her fore and aft line. While progressing forward, she slides off to leeward. Assuming the leeway amounted to half a point, she makes good the direction shown by her compass, plus the half point. With sailing vessels which, of course, are most affected by leeway, the leeway was named from the tack on which the vessel happened to be placed, as "leeway on the starboard tack," or "leeway on the port tack," or for short, "starboard tack leeway," and "port tack leeway." Now if the vessel were on, say, the starboard tack, that is, with the wind coming over her starboard bow, she would be forced off somewhat to the left, and the result would be the same as Westerly compass error. On the port tack, she would be forced off to the right, with the same result as Easterly compass error. Thus, the practice is to estimate the angle of leeway, and apply it as a compass error, the rule being:

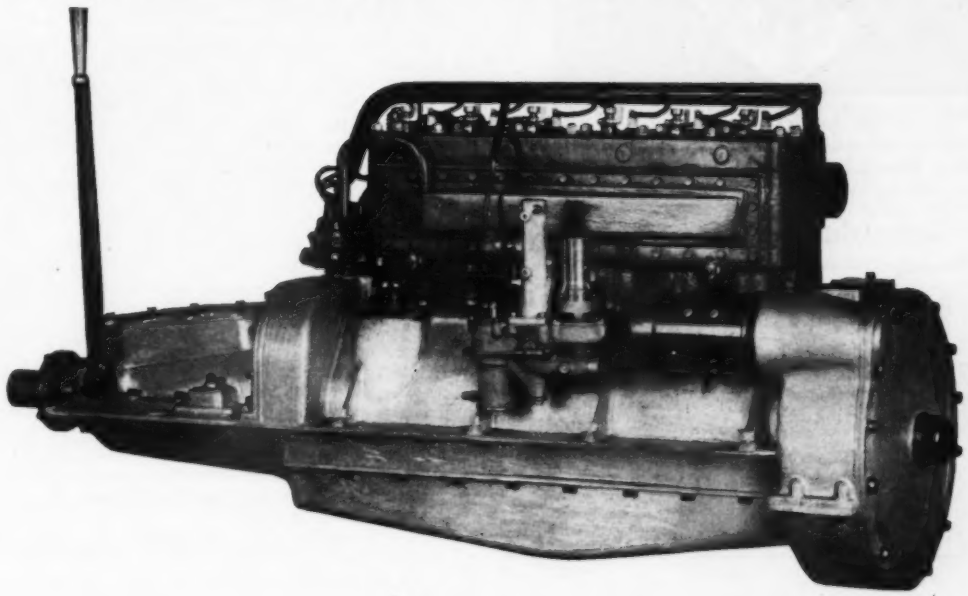
Starboard tack leeway, apply to left, same as Westerly error.
Port tack leeway, apply to right, same as Easterly error.

The estimation of the leeway angle is a matter of much nicety. It depends upon observation and experience, rather than formula. Sometimes, the angle between the ships wake and her fore and aft line might furnish an indication of her leeway. Some suggest that the angle between her fore and aft line and the log line trailed over the stern,

(*Continued on page 128*)

Advertising Index will be found on page 130

PACKARD
MARINE MOTORS



Packard Junior Model

A marine engine particularly adapted to a 20 or 25 foot runabout or general utility boat requiring a speed of approximately 25 miles an hour. Built in the Packard Engineering Divison by the same corps of mechanics who produced the winner of the last Gold Cup Trophy. Each engine, before shipment, receives a thorough dynamometer test. Vibration is practically eliminated at all speeds.

SPECIFICATIONS

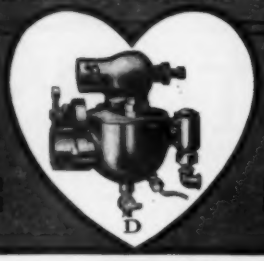
6-Cylinders
3-1/8" Bore 5" Stroke
Piston displacement
268 cubic inches
H. P. 45 at 1800 R. P. M.

Ignition system Delco
Oiling system full pressure
Crankshaft 7-bearings
Weight complete 650 lbs.
Price—$1,500.00

PACKARD MOTOR CAR COMPANY, DETROIT

ASK THE MAN WHO OWNS ONE

The SCHEBLER CARBURETOR



Will increase the efficiency of your engine, and make it longer lived and more economical. Over 1,500,000 in daily use. Models suitable for every type of motor.

Schebler Guarantee

Maximum power, minimum consumption.

Be Sure Your Motor is Equipped with the Genuine

THE WHEELER-SCHEBLER CARBURETOR COMPANY, INC.

NOW'S THE TIME—

While the craft is laid up
TO LET US BALANCE
CRANKSHAFT and FLYWHEEL

Eliminate

Vibration

Increase Power

Prevent Discomfort

The cost of this service is so moderate as to be within the reach of every motor craft owner.

Write us for particulars as to cost.

WE SOLVE VIBRATION PROBLEMS

VIBRATION SPECIALTY COMPANY
N. W. Akimoff, Pres.
Harrison Bldg., Philadelphia, Pa.

Some Dead Reckoning Pointers

(*Continued from page 126*)

is an index. But often enough, the wake soon disappears in the chop astearn, and the log line squirms like a snake. We doubt if there is any dependable way of measuring leeway, other than by wise judgment based on experience.

Current is the lateral movement of a body of water. The Gulf Stream affords a typical example. Current is unlike leeway in this, that it does not affect the course of the vessel *through the water*, for water and boat move on together. But it does affect its course *over the land*. The presence of a current may not be observable from the vessel. The water may appear smooth and unmoving. The vessel may appear to be making her proper course and speed, and yet when a fix is obtained, as by astronomical observation, she may be found to be miles and miles away from her supposed location. Boat and water together have moved over the ground in the direction of the set of the current, and by an amount equaling the drift, times the number of hours the vessel has been under the currents' influence.

The great ocean currents are now pretty well charted or described in the Sailing Directions or Pilots. But unexpected currents may be encountered, and the navigator must be wary of them. In the open ocean, the rise and fall of the tide causes no marked lateral movement of the surface waters. But near the coast, and particularly in or about the entrance of large rivers, bays, or sounds, the tide may create considerable current.

Current affords a serious problem in navigation, because of the difficulty of detecting its presence, and of precisely knowing its set and drift. The navigator sails on, confident of his position. But the unknown and unseen current may have thrown him far off his course. Now leeway is a fairly decent shipmate, for you may generally know, or at least guess, that he is aboard. But current is a sort of stowaway, who may not have the decency to introduce himself until the end of the voyage—perhaps on a sand-bar or reef. The only rule of safety is to freely consult chart, sailing directions, and local knowledge, and to keep the sounding lead going, whenever the vessel may by any possibility be in a situation of danger.

Once the set and drift of currents are known, it is simplicity itself to compute their effect on the vessels position. The set or direction of the current is treated as a course, and its drift or knots per hour made good, is treated as a distance; the drift, of course, being multiplied by the number of hours the vessel may be under the currents' influence. Thus if a vessel is 2.4 hours in a current setting SE x E, drift 1.7 knots, the effect is the same as if she had sailed Course SE x E, Dist. 4.1 miles. This course and Dist. may be entered in the Traverse, and the DL and Dep found in the usual way, and included in the totals.

It is a droll old practice to attribute all the errors of navigation to current, which, has thus become sort of a cassock to cover a multitude of sins! A tipsy quartermaster may have steered a grape vine course, or laid his jack knife on the binnacle, after cutting a slice of plug. But when the old man gets his sights and finds he is twenty miles out, the chances are that he will gravely chalk down the error to the credit of current.

The foregoing, we think, should make clear the fact, often reiterated in these lessons, that dead reckoning data is approximate only. No precisely true position can be calculated from erroneous data. The mathematics may be perfection, the computation free from error, but if the data is wrong, the position will be wrong. The errors of compass, variation, deviation, logging, steermanship, leeway, and current, may, combined together, pile up an astonishing total. And yet with skill and attention, these errors may be so detected and allowed for that dependable results may be obtained. Indeed, in these days of swift steamers and highly perfected instruments, it is safe to say that the experienced mariner may always know his position approximately, and that is good enough in the open sea. It is when the vessel nears the coast, or other places of shoal water, that even modest errors may result in disaster. There is then but one watchword of safety, which every navigator should write upon the table of his heart, and never for a moment forget: *Keep the sounding lead going.*

In the next lesson, with which we plan to conclude the series, various problems will be given combining the matters discussed in this and the preceding chapters.

See page 108 for Great Circle Problem

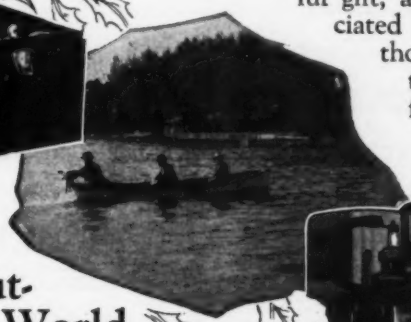
Advertising Index will be found on page 130

Why Not Give

many thousand days of Happiness

THE beautifully finished lightweight Johnson Twin Motor is the ideal gift for man or boy. It will make this Christmas memorable among all the gift days of a lifetime.

No other gift you can make will prove such a delightful surprise. It is at once a thoughtful gift, a practical gift, an appreciated gift that will bring many thousand days of happiness to every member of the family.



The Lightest, Speediest, and Most Durable Outboard Motor In the World

The Johnson Lightweight Twin Motor provides the most portable power for water travel. Weighing only 35 pounds complete, it is easily carried even by a 12 year old girl or boy. It takes apart at one joint and fits into a handy carrying case which slides under a Pullman car seat. No batteries to carry. Complete ready to run. In one case you carry **everything** needed for the trip.

Fourteen Other Outstanding Features

Economical Power. Develops 2 H. P. with very small gas consumption.

Universal Steering-Reversing. All accomplished by simply swinging the motor around at any angle, driving the boat forward, backward, sidewise or around.

Extremely Quiet Muffler effectively silences the exhaust.

Free From Vibration. The two opposing cylinders firing at the same time eliminates thrust on the journal bearings. Practically free from vibration.

Easy Starting. No cranking, simply spin motor by a cord like spinning a top.

Free Automatic Tilting. Automatically tilts over logs, rock or shallows and automatically returns to former position.

Real Carburetor. Float Feed with throttle control, same as on an automobile.

No Batteries. Quick Action, High Tension Fly Wheel Magneto. Moisture-proof and oil-proof. Gives a strong, hot, quick starting spark.

Crankshaft. Drop forged steel, case hardened and ground. Hard phosphor-bronze bearings, practically wearproof.

Take Apart Feature. Motor takes apart at joint like a shot gun. Packs in handy case or in small space.

Cleanliness. By far the cleanest of all gasoline motors. No oil holes or grease cups.

Appearance. Beautifully finished in polished "Lynite" and nickel.

Canoe Attachment. Neat attachment that will readily fit standard canoe.

Longest Life. Crank shaft, drive shaft and propeller shaft case hardened and ground, running in hard phosphor-bronze bearings. Bevel gears heat treated nickel steel. Fully guaranteed.

Write at once for Free Catalog Folder and name of dealer near you. Immediate deliveries

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New York Offices
120 Broadway, New York, N. Y.

Johnson

DETACHABLE MOTOR
For Boats and Canoes

Every Johnson Outboard Motor is guaranteed free from defects in material and workmanship, and to operate satisfactorily as claimed.

MoToR BoatinG Advertising Index

A

Allison Engineering Co. 101
American Balsa Co., Inc. 71-83
American Brass Co. 113
American Engineering Co. 72
Auto Engine Works 104

B

Barker, Factory, The 87
Beetle, Carl N. 58
Belle Isle Boat & Engine Co. 90-122
Bermuda Races 4
Biscayne Yacht & Machine Wks. 60
Bosch Magneto Corp., American 90
Bosch Magneto Co., Inc., Robert 64
Bowes, Thomas D. 58
Brennan Motor Mfg. Co. 85
Brooks Co., The 90
Bruns, Kimball & Co., Inc. 55
Bryant & Berry Propeller Co. 90
Buffalo Gasoline Motor Co. 1-55
Burgess & Paine 58

C

Cady Co., C. N. 86
Caille Perfection Motor Co. 122
Caldwell & Co., J. E. 108
Carlisle & Finch Co., The 90
Carlyle Johnson Machine Co. 64
Carpenter & Co., Inc., Geo. B. 112
Classified Advertisements 54-56
Coes Wrench Co. 104
Columbian Bronze Co. 86
Comet Electric Co. 85
Consolidated Shipbuilding Corp. 4th Cover
Cox & Stevens 48-58-62

D

Defoe Boat & Motor Works 114
Demuth & Co., Wm. 58
Disappearing Propeller Boat Co. 88
Dobson, B. T. 58
Donnelly, William T. 88

E

Elco Works, The 2nd cover-83
Elto Outboard Motor Co. 111
Evinrude Motor Co. 103

F

Fay & Bowen Engine Co. 132
Ferdinand & Co., L. W. 106
Fisher, Carl G. 61
Flamingo Hotel 60
Frisbie Motor Co. 117

G

Gardner & Co., Wm. 53
Gielow, Henry J. 49-65-80
Gill & Sons Forge & Mach. Wks., P. H. 54
Gordon Propeller & Mfg. Co. 88
Gray Boats, The 86
Gray Motor Corp. 110
Great Lakes Boat Building Co. 8
Grebe & Co., Henry C. 51

H

Hacker Boat Co., John L. 107
Haddock, R. M. 53-58
Hall-Scott Motor Car Co. 59
Hand, Jr., Wm. H. 58
Harrison Boat Works, R. W. 88
Hyde Windlass Co. 66

J

Jacksonville Boat Co. 108
Jennings Co., H. H. 52
Jones, Frank Bowne 52
Johnson Motor Co. 129

K

Kermath Mfg. Co. 118
Kuhls, H. B. Fred 55

L

Lockwood-Ash Motor Co. 100

M

McFarland Foundry & Machine Co. 112
McLouth, Sidney C. 96
Marine Engine Co. of Phila. 57
Marine Wheel Co. 3
Masters & Co., W. L. 55
Mathis Yacht Bldg. Co. 105
Matthews Boat Co. 73
Mercantile Specialties Corp. 78
Mower, Chas. D. 58
Mullins Body Corp. 88

N

National Carbon Co. 88
Naval Architects & Yacht Brokers 58
New London Ship & Engine Co. 67-68-69-70
New York Yacht, Launch & Engine Co. 87
Newport News Shipbldg & Dry Dock Co. 109
Niagara Motors Corp 92
Nock, Frederick S. 58

O

Oberdorfer Brass Co., M. L. 88
Oliven-Oil-Gas Burner & Machine Co. 74

P

Packard Motor Car Co. 127
Palmer Bros., Engines, Inc. 82
Paragon Gear Works 6-7
Peerless Marine Motor Co. 86
Pigeon Hollow Spar Co. 87
Piston Ring Co., The 125
Prentiss-Wabers Stove Co. 123
Purdy Boat Co. 87

R

Rajah Auto Supply Co. 99
Red Bank Yacht Works 86
Red Wing Motor Co. 97
Regal Gasoline Engine Co. 116
Richardson Boat Co. 88
Ritchie & Sons Co. 86

S

Scripps Motor Co. 124
Schellenberg, B. & Sons 90
Sea Sled Co. 115
Sexton Motor Co., The 98
Skaneateles Boat & Canoe Co. 126
Smith-Meeker Co. 75
Snow & Petrelli Mfg. Co. 120
Southern Cypress Mfg. Assn. 119
Spinaway Boat Motor Co. 95
Standard Gear Co. 94
Standard Motor Cons. Co. 2nd Cover-79
Stearns-McKay Mfg. Co. 116
Stearns Motor Mfg. Co. 121
Sterling Engine Co. ....3rd Cover
Syracuse Gear Co. 96

T

Tams & King 50
Tebo Yacht Basin 93
Toppan Boat Mfg. Co. 90
Tiebout, W. & J. 77
Tvedt-Smith Co. 126

U

U. S. Government Sales 89
United Radio & Electric Co. 55
Universal Motor Co. 76

V

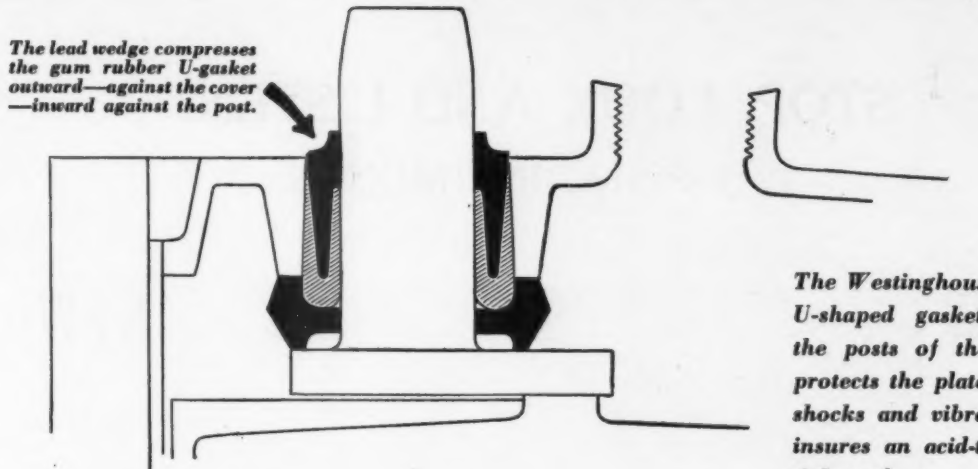
Valentine & Co. 47
Vibration Specialty Co. 128

W

Westinghouse Union Battery Co. 131
Westinghouse Electric & Mfg. Co. 86
Wheeler Schebler Carburetor Co., The 128
Wilcox, Crittenden & Co., Inc. 84
Willis Co., E. J. 87
Winslow, Ralph E. 58
Winton Engine Works 81
Wisconsin Motor Mfg. Co. 2
Wolverine Motor Works 86
Wood, B. F., Inc. 58
Wood, Gar. Inc. 63

Z

Zundel Co., Inc., R. W. 90



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Westinghouse Batteries are just that. Vigorous and ruggedly built to withstand the jolts from rough water and the vibration from a laboring or racing motor. Oversize plate area gives them approximately 20 per cent greater capacity than ordinary batteries.

Adopted as standard equipment by Miller Engine Company, The Peerless Marine Engine Company and Sterling Engine Company.

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Swissvale, Pa.

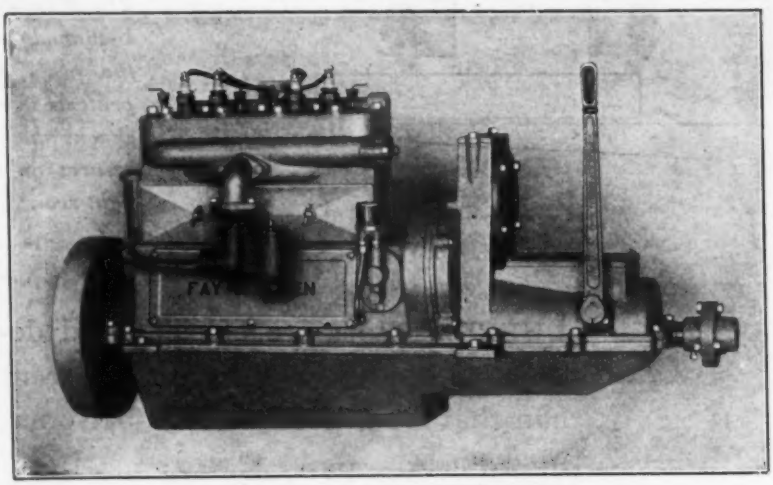
WESTINGHOUSE BATTERIES

STOP, LOOK AND LISTEN!

12 HP MARINE MOTOR

NEW

DESIGNED and BUILT for MARINE SERVICE



NEW

DESIGNED and BUILT for MARINE SERVICE

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7 HP at 800 R.P.M.—8½ HP at 1000 R.P.M.—12 HP at 1400 R.P.M.

AND SHE'LL DO IT

BORE 2 13/16" STROKE 4" WEIGHT 365 LBS.

EQUIPMENT

REVERSE GEAR, CARBURETOR, BATTERY-IGNITION, IGNITION SWITCH, SPARK AND THROTTLE CONTROLS, SPARK PLUGS, WIRING, AND WATER PUMP.

PRICE **$350.00** PRICE

F.O.B. GENEVA N.Y.

OTHER MODELS UP TO 85 HP—SEND FOR CATALOGUE

RELIABILITY F&B

FAY & BOWEN ENGINE COMPANY

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PHILADELPHIA: 116 Walnut St., Marine Equipment & Supply Co., Representatives
BOSTON: 84 Atlantic Ave., Gray-Aldrich Co., Representatives

Advertising Index will be found on page 130

V3